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MOTOR AGE

JUN 9 1942

FOR AUTOMOTIVE SERVICEMEN



JUNE 1942

THIS ISSUE

Dealer Produces
War

M. W. Bowman

Who's Right About
Gas Rationing?

Master Transmission
Work

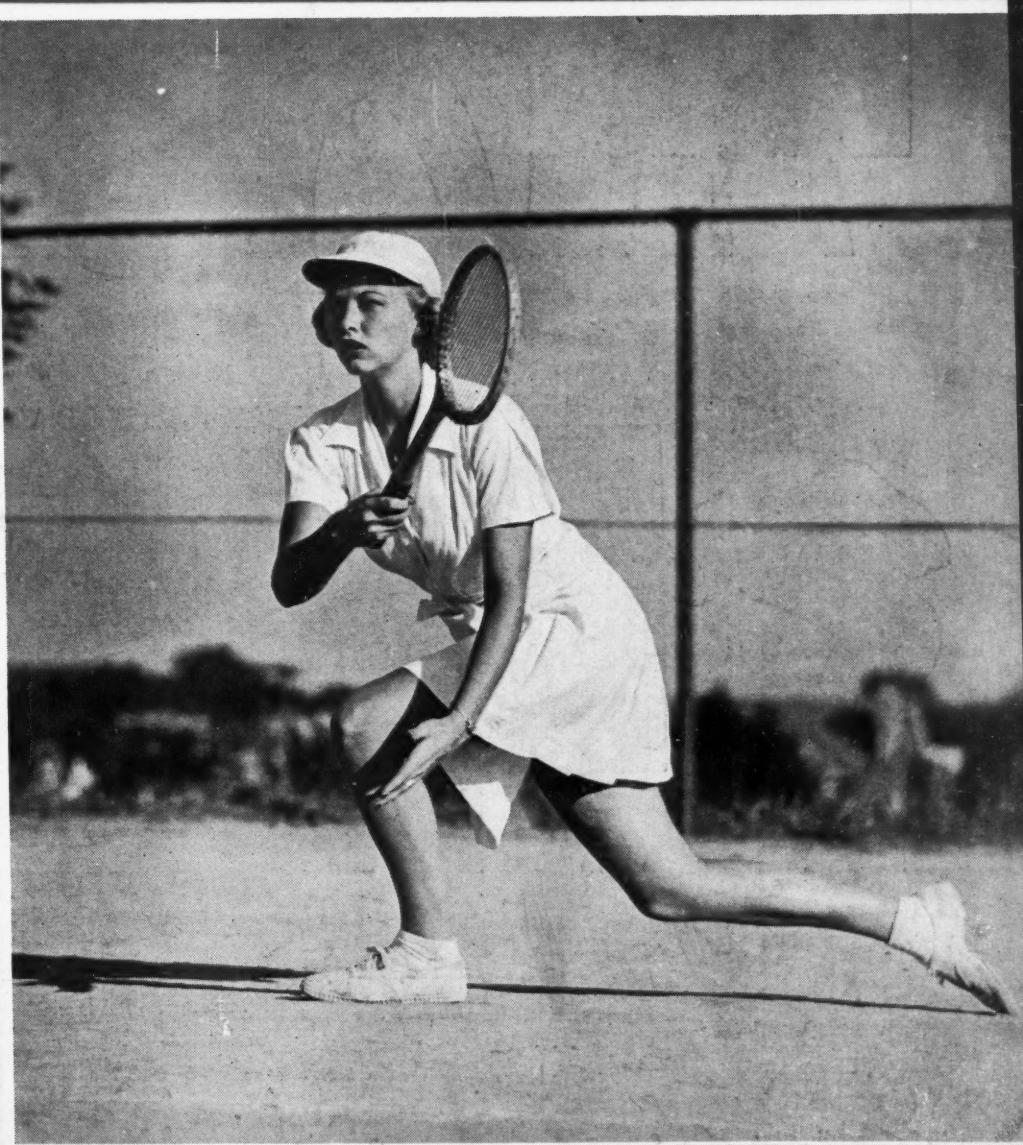
J. Edward Ford

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Wheel Alignment as
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Oil Ring Service

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SAVE GAS

AC SPARK PLUG DIVISION • General Motors Corporation

MOTOR AGE

With Which is Combined AUTOMOBILE TRADE JOURNAL

FOR AUTOMOTIVE SERVICEMEN

Vol. LXI, No. 7

June, 1942

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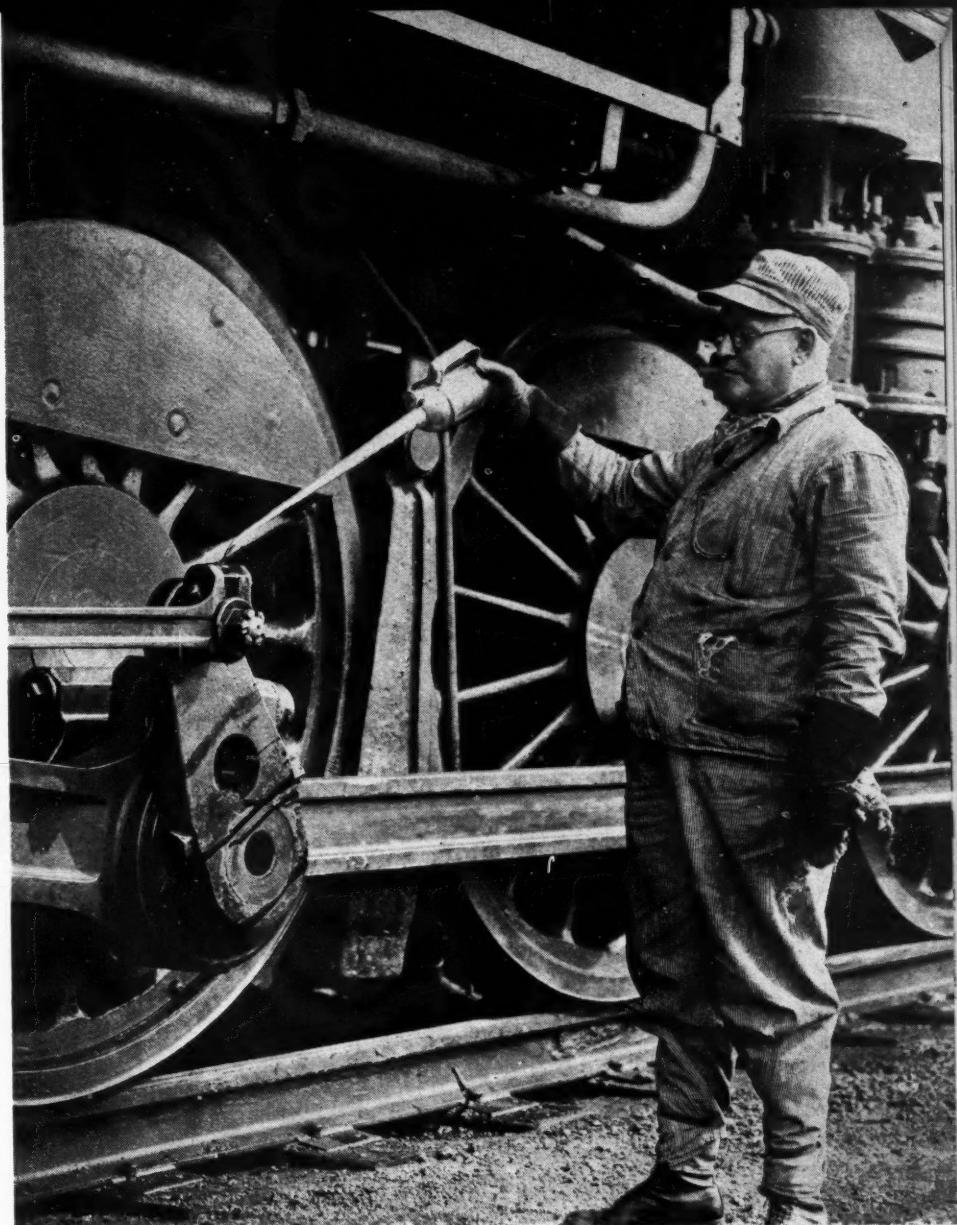
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MOTOR AGE

SHOP TALK

By

Bill Tobolek



J U N E • 1 9 4 2

Transportation

Trains and buses can't carry all the men and women who have to get work. It just can't be done with the 38,000 railway cars and 141,000 buses, all that were available for passenger transportation in 1940. At that time, trains and buses accounted for 71 billion miles of passenger travel while automobiles were driven 274 billion miles. That's necessity driving only and doesn't include week-end trips to the beach. Just to make the figure more impressive, the automobile travel is 3.9 times that of train and bus. So, when someone tries to tell you that passenger cars are to be laid up for the duration, you can slap him in the eye with some actual figures and prove that trains and buses don't have enough capacity to handle the job. They are geared to take care of normal peace-time loads and are

not equipped to handle the passengers who normally rode to work in the 30 million passenger cars.

Specifications

Out in Cuyahoga Falls, Ohio, Dave Naugle has bought his kid a Harley-Davidson. I'm still trying to get those specifications for you Dave, but evidently the Harley factory is up to its ears in war orders.

Balm

Maybe you all remember my quoting from a New Jersey subscriber who thought I should be put in a

detention camp for the duration because I had suggested that probably it would be necessary to retard the spark because of lower octane fuel.

Now comes a letter from Kingsville, Texas way, from J. L. Tunnell to be exact, who brightens a dull day by taking my side of the argument and clinches it by submitting a service bulletin from Chevrolet which says: "When lower octane fuels are used, it will be necessary to retard the octane selector." I hope Mr. C. in northern New Jersey will paste this in his hat.

Many thanks Mr. Tunnell, and may all your customers' tires last for the duration.



River barge loading from tanker. Barges are suggested as one way to supply East. They would travel from Florida on Inland Waterway.



Tank cars, which last month were reported to be hauling 600,000 barrels of oil daily to the East, half that area's normal consumption.



WHO'S RIGHT

ABOUT GAS RATIONING?

ACCORDING to reports of newspaper men who attended President Roosevelt's press conference on May 26, he told them that he did not see much to be alarmed about in the present situation with respect to automobile tires. For most of us, naturally, just what he meant—and they are not quoted here—is, somewhat at least, a matter of interpretation. Unquestionably he is concerned about the rubber shortage even as it affects the supply of tires available for civilian use. Who would not be? It is obvious now to almost everyone, as it has been to some of us for a long time, that motor vehicle highway transportation is a critically important factor in our national economy and a vital element in our war production activities.

Instead of giving car owners all the facts about the situation, officials in the statements summarized here leave people perplexed and doubting

To some, this possibly off-hand remark of the President may have seemed, inadvertently or otherwise, to reflect what many of us believe has been a serious shortcoming in the attitude of the Administration toward motor vehicle transportation and a dangerous deficiency in the actions that either were not taken at all or were almost tragically delayed in attempts to preserve it for the national welfare.

The length of time during which the threat of war with Japan and Germany hung over us was measured not in months but in years. An almost equal length of time has elapsed since warnings as to the possible consequences of such wars, particularly with respect to our rubber supply, were given by those who were qualified to speak. But due, undoubtedly, to the failure of the President's closer advisers to



Laying pipeline from Maine to Montreal. Plans were offered to provide added lines to carry oil to Eastern seaboard.



BY J. EDWARD FORD

see clearly what was ahead and to comprehend the results of later happenings, adequate measures with regard to rubber and gasoline were neither effectively taken nor officially prescribed.

Today's actualities could hardly have been considered as probabilities. They may have been looked upon as merely more or less remote possibilities, but it seems doubtful that they were given as high a place

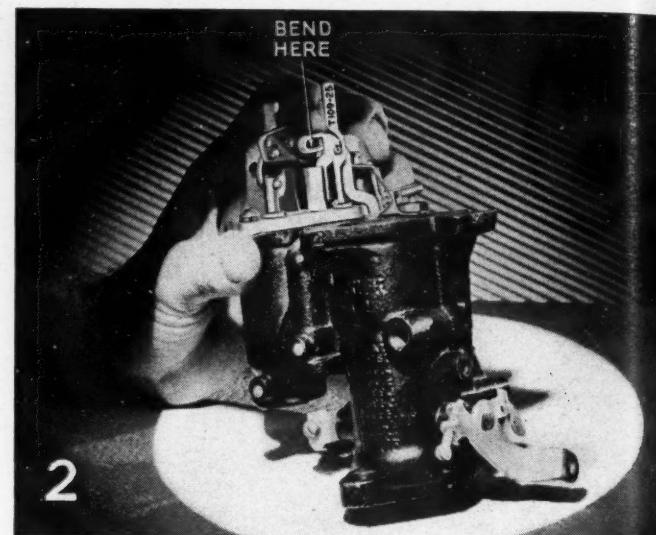
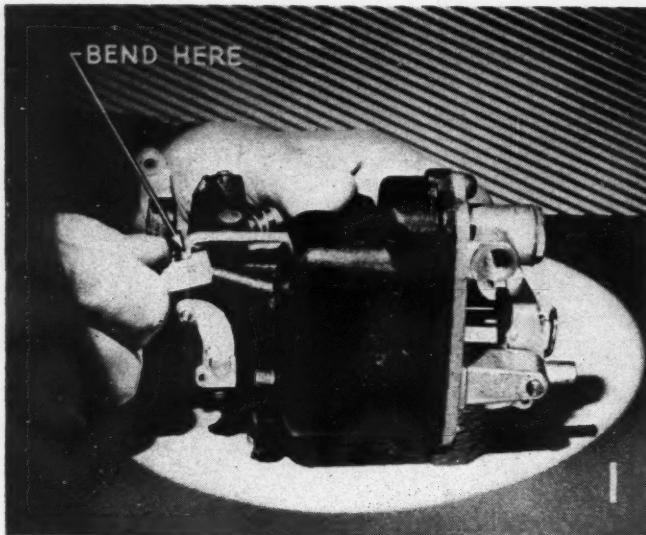
in our plans as they surely merited.

For years something like 98 per cent of our rubber has come from the East Indies. For years about 95 per cent of the gasoline and fuel oil for the Eastern states has come from the oil fields in the Southwest, up along the Atlantic Coast in tankers. The Japs now have the East Indies and our rubber from that source is gone. The Germans have stopped our coastwise oil ship-

ments by sinking our tankers. These things have happened. Either they were wholly unexpected or their importance was woefully underestimated.

A year ago we first learned that there was trouble with respect to gasoline so far as the Eastern states were concerned. The British needed, and we lent them, so many of our tankers that the gasoline requirements of those States could not be met. There was much ado, and still is, about pipe lines. Proposals were made to be vetoed later. There was a controversy regarding the possible use of railway tank cars to make up the deficiency. The Petroleum Coordinator said it couldn't be done. The railroads said it could. We haven't got the pipe lines yet, but we did get the

(Continued on Page 59)



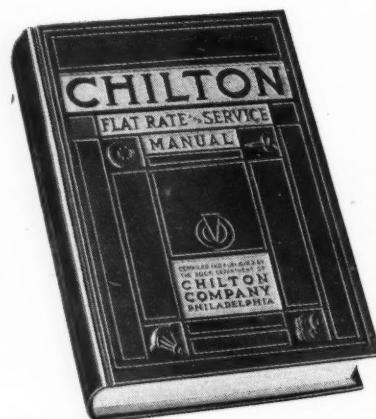
THE second type carburetor used on the 1942 Pontiac Six is a Carter Model 545S. Adjustment varies slightly from that of the first type, and the following instructions apply to the Model 545S only:

For tune-up adjustment on the car, set the engine speed at 7 to 8 m.p.h. and idle adjusting screw between $\frac{3}{4}$ and $1\frac{1}{2}$ turns out from its seat.

Should it be necessary to remove the carburetor from the engine to check all adjustments, the illustrations show the proper sequence for checking.

Fig. 1. The pump-stroke adjustment should be made with the pump connector link in the lower hole. Back out the throttle-adjusting screw until the throttle is closed. Open the throttle to wide-open position and scratch a mark on the accelerating plunger rod at the bowl cover. Close the throttle and measure from the scratch mark to the boss on the bowl cover. The distance should be $19/64$ in. If this distance is not correct, bend the throttle connector rod at the lower angle.

Fig. 2. The metering rod should be adjusted after adjusting the accelerating pump, and gage No. T109-25 should be used. Back out the throttle-lever adjusting screw until the throttle is closed. Push down the step-up piston arm so that the metering rod pin rests on the shoulder of the notch in the gage. Bend the lip on the step-up piston arm so that, when the link is pushed down against the pump arm pin, there is less than .005 in. clearance between the metering



rod pin and the shoulder in the notch of the gage.

Fig. 3. The unloader adjustment should be set with the throttle valve in the wide-open position. Adjust the cam on the throttle lever to give $7/32$ in. clearance between the lower edge of the choke valve and the wall of the air horn.

Fig. 4. The anti-percolator adjustment can be set either with the carburetor on or off the engine. If on the engine, set the idle speed to 7 to 8 m.p.h. and then place the fast idle cam so that the end of the idle-speed adjusting screw rests on the fastest speed step of the cam. With the anti-per-

CARBURETOR

Follow this procedure Pontiac Six carburetor

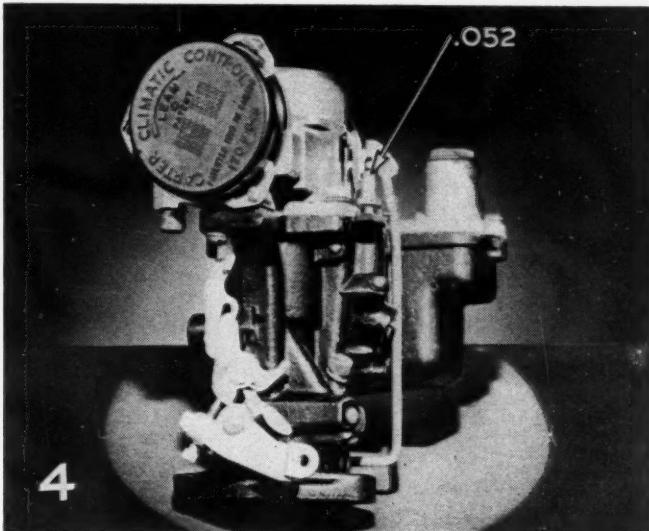
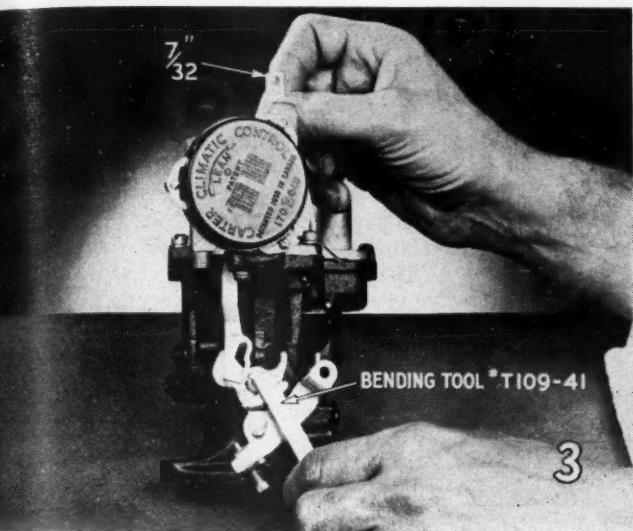
The mechanical procedure in this and other articles in Motor Age supplements the Service Section of the Chilton Flat Rate and Service Manual, the book used by 26,000 maintenance shops.

Photographs courtesy

colator cap closed, bend the anti-percolator rocker arm until there is .052 in. clearance between the rocker arm and the pump arm. A No. 55 drill can be used for the .052 in. gage.

If the adjustment is made with the carburetor off the car, crack the throttle valve .030 in. by placing Gage T109-29 or a drill .030 in. in diameter between the lower edge of the throttle valve and the bore of the carburetor. Adjust the anti-percolator arm by bending to obtain a clearance of .010 in. between it and the pump arm with the anti-percolator cap seated.

Fig. 5. To check the float level, remove the bowl cover and float



TUNE-UP

**when adjusting the 1942
and save customers gas**



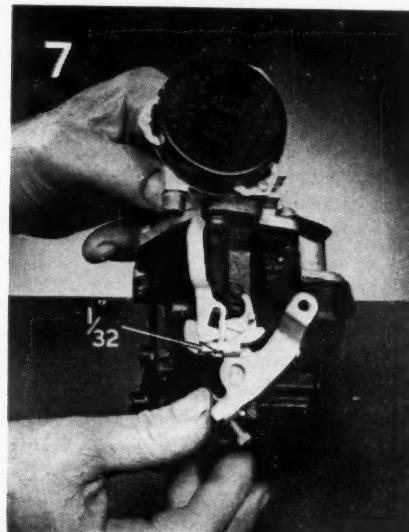
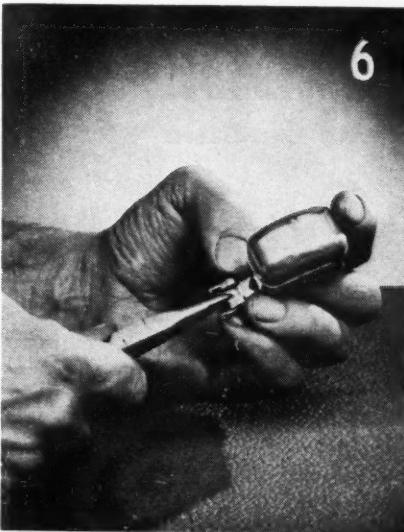
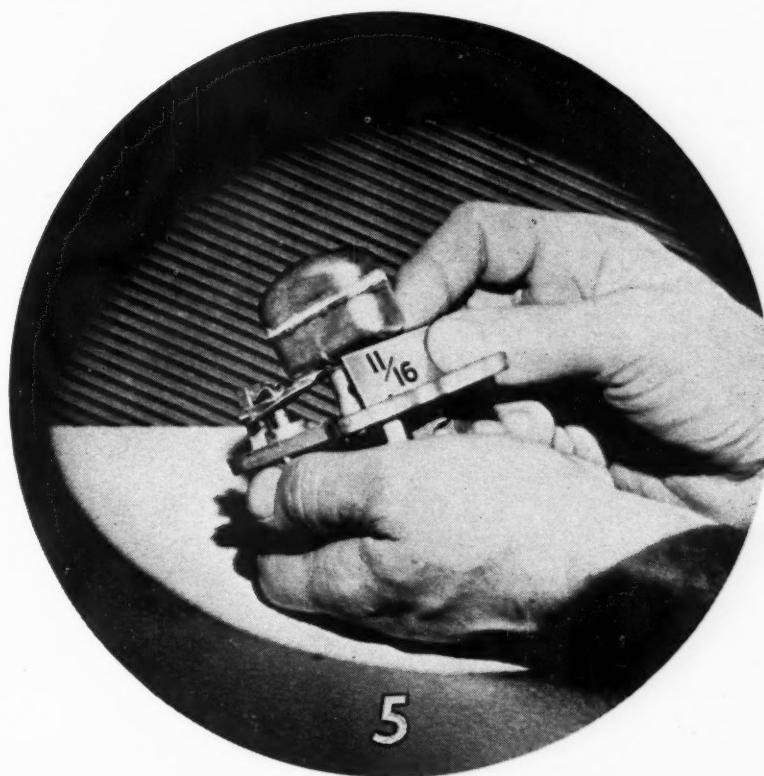
Pontiac Motor Division

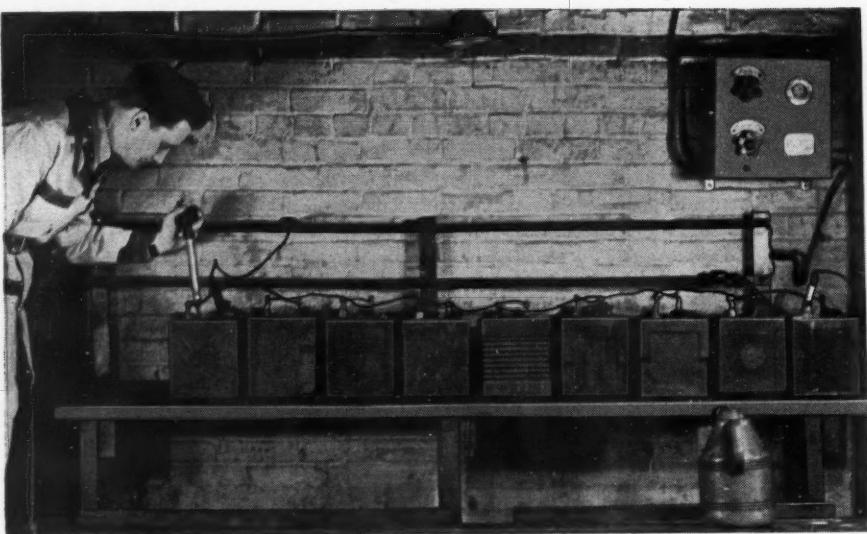
assembly and hold it with the float up. Insert an 11/16 in. gage between the end of the float and the surface of the bowl cover, as shown.

Fig. 6. To adjust float level, remove the float from the cover and bend the lip on the float arm.

Fig. 7. Check the lockout adjustment for the choke by first holding the throttle and choke valves in the wide-open position. Bend the lip on the fast-idle link to give 1/32 in. clearance between the lip and the throttle lever lock.

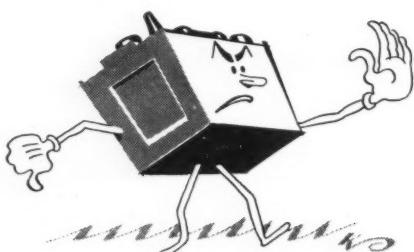
The climatic control housing is marked for "rich" and "lean" positions, and for average driving it should be set three points "rich."





BATTERY

"HOARDING" UNWISE



Though present supplies are ample, many owners have overbought, and need the help of the serviceman to keep the idle battery in condition

BATTERY sales have increased noticeably during the past 90 days, indicating that many owners have bought batteries so that they would be sure to have one on hand in case a shortage develops as the war progresses.

According to the best informa-

tion available at the present time, there is nothing to indicate that there is likely to be a shortage of batteries. Naturally, such a forecast is subject to changing conditions, but from the present outlook there will be enough batteries to meet the demand for this year and

for 1943. Therefore, it is unnecessary for anyone to buy a battery now if it is not for immediate use.

Aside from the fact that hoarding is unnecessary, there is a good chance that the money invested now in a battery for future use will be just that much money thrown away. A battery is a perishable item, and unless it is given good care it will deteriorate to the point where it will be worthless except for scrap value.

It should be the duty of the repairman who has sold a battery to a customer, if he knows that it was not to be put in service immediately, to contact the customer and arrange to give the battery proper care during the storage period. Otherwise, the customer may become dissatisfied with the battery and blame it on the make of battery or on the repairman who sold it to him for not telling him the type of care the battery should have been given.

A battery that is allowed to stand idle will sulphate—that is, the acid of the electrolyte leaves the solution and deposits on the plates in the form of lead sulphate, destroying the porosity of the plates, and the battery will be fully discharged when the customer installs it in his car.

A battery in storage should be given a freshener charge every 30 days, and should be stored in a cool place, and kept clean. If this is not done the battery will lose its charge and, if held for a period of a few months, will be in such a condition that it will not take a recharge.

Another point that must be taken into consideration when selling a battery for "hoarding" purposes is the manufacturer's guarantee. The guarantee becomes effective on the date the battery is sold, regardless of the date it is actually put into service. This is likely to lead to difficulties if a case of adjustment should come up, because the customer will naturally consider the amount of service he obtained from the battery, and not the length of time he actually owned it. Then, too, lack of proper attention during the storage period comes under the heading of "abuse" in the manufacturer's interpretation of the terms of the guarantee, and this makes it extremely questionable whether such a battery would actually be in line for adjustment consideration.

So, repairmen should discourage their customers from buying a battery at this time unless the old battery is in need of replacement.



PERSONALIZED SERVICE

Shops taking a genuine interest in the customer and the condition of his car will be busiest during war

WHEN times were good and there were lots of places where a man could get his car fixed, the car dealers with good service departments had to develop and use effective follow-up systems, so their customers would be constantly reminded that there really was a difference between good, reliable service and just "service." What is the difference? Well, let's see.

In the first place, the people who run service stations that give "good, reliable service" show a personal interest in each customer's car. How personal? Personal enough to have a man who knows what he is talking about, and also knows how to say it, contact each customer either by telephone or by personal contact, and do it often enough to keep the customer constantly reminded that there is such

By DUKE GOLDEN

Sales Engineer, the Perfect Circle Co.

a thing as good, reliable service and that you have it.

And, speaking of a good man to contact customers, here's a thought: If the car dealer is an American business man, he is the one to do the contacting. Yes, that's what I said. Maybe the car dealer, himself, is the man who should use the telephone, or even call on his customers at night, accompanied by the best mechanic he has in his shop to explain technical matters. Does this statement surprise you? Most certainly it does. Well, if it surprises you, how surprised and pleased do you think some of your customers would be if they heard you talking to them about something other than buying a new car?

Your customers who know you would certainly be surprised if you called them on the telephone and asked if it would inconvenience them too much if you were to call at their homes about 7:30 p. m. to talk about the best way to make their cars last as long as possible, but, if you were to call a total stranger on the telephone and ask that question, you might have to rush wildly out with a doctor to bring the customer out of a dead faint.

The idea of a car dealer calling someone on the telephone to talk about something besides buying a new or used car might be a greater shock than the average person could stand, but car dealers who are American business men will readily recognize that this idea has definite possibilities of developing parts and labor sales that are even more than 100 per cent of the fixed expense.

There is another characteristic of good, reliable service that is just as important as showing personal interest through personal contact, and that is the ability to recognize the need for service before it is evident to the customer. This type of service is called preventive service, but the word "preventive," as it is used here, means far more than the average person thinks. Car dealers who are American business men know that it not only means a type of service that prevents expensive repair bills, prevents breakdowns that inconvenience the owners, prevents accidents that

(Continued on Page 76)

WHEEL ALIGNMENT AS A

THE present necessity for conserving tires has created an almost unlimited opportunity for front-end service. Such service is demanded not only by owners, who want their tires to last as long as possible, but by our war effort.

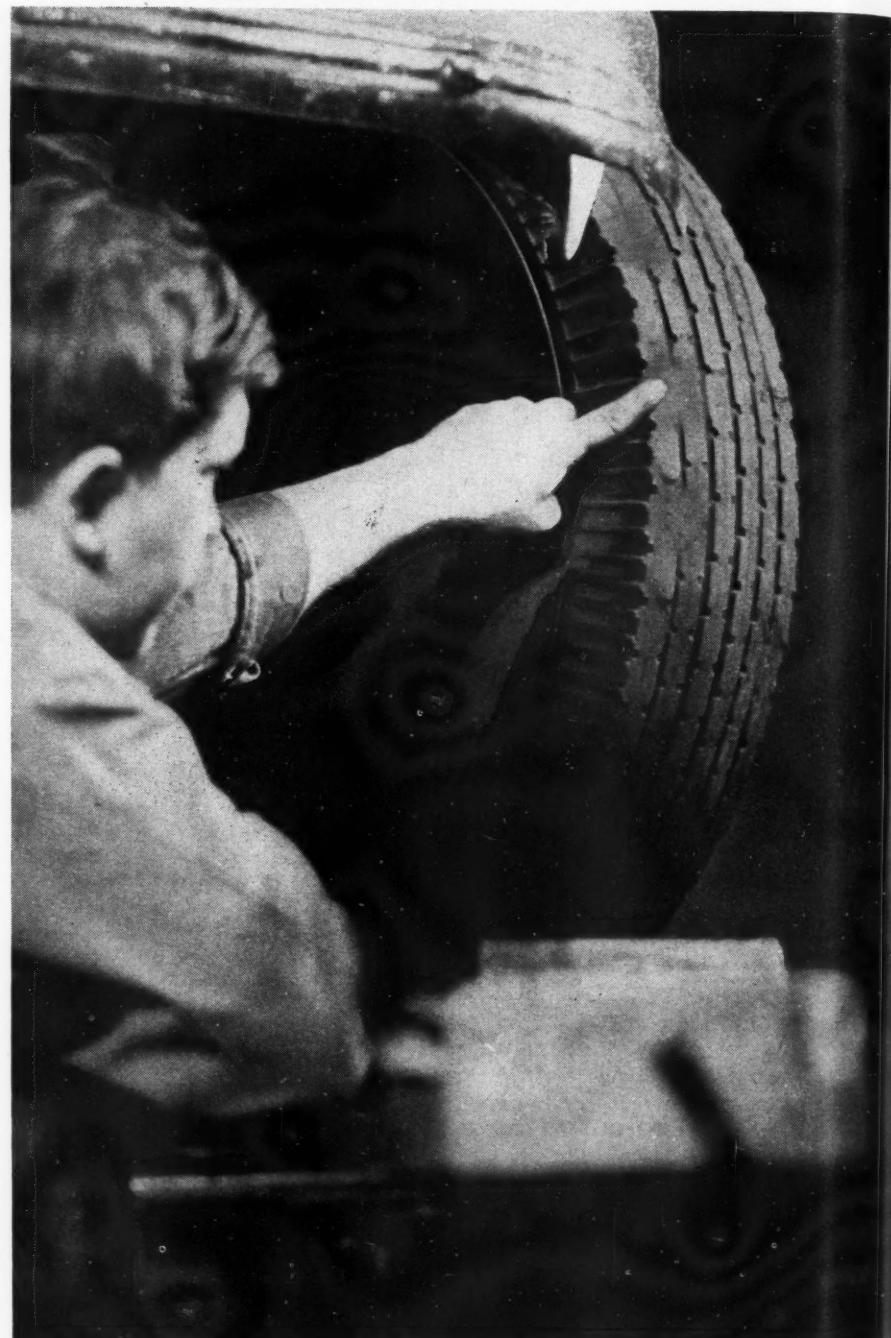
These conclusions are inevitable when any serious study is made of the present rubber situation. Even the most optimistic government spokesman sees little chance of relieving the shortage of natural rubber with the synthetic or home-grown product before 1945. In the meantime, stocks of crude rubber must be made to cover as many essential needs as possible and the tires now on cars and trucks must be made to roll as far as care and common-sense driving will let them.

Complete care means a great deal more than looking after inflation and checking for cuts and foreign bodies in the casing. Probably more than anything else, it means correct wheel alignment and wheel balancing. It certainly isn't conserving the country's limited supply of rubber to give a physician or a war worker a certificate for a new or recapped tire when misalignment of his wheels makes it evident that he's going to wear out the replacement tire long before he should.

This point was raised a few weeks ago by Will Dammann, president of the Bear Manufacturing Co., in a letter to the Rock Island County (Ill.) Tire Rationing Board. In this letter, Dammann said:

"As we understand it, the rationing board requires every person making a plea for new tires to submit evidence that the tires he has are worn out. Then, providing he has the necessary qualifications, he is granted new tires.

"Our point is simply this: What assurance has the board that the motorist, who makes a plea, has not allowed his tires to wear out too rapidly through neglect? Then, what assurance has the board that when new tires are put on the car



they won't be worn out just as rapidly or even at a greater rate? Does the board make any inquiries as to what mileage the motorist has received on his old tires?"

Then, after pointing out that tire companies, oil companies, and the government itself list misalign-

ment of wheels as the greatest single cause of rapid and premature tire wear, Dammann explains how this wear takes place.

"It is our belief," he continues, "that every motorist making a request for new tires should have a complete wheel-alignment and bal-

TIRE SAVER



ance inspection. Findings from this inspection should be filed with the request for new tires. Then, if a misalignment or unbalanced condition causing tire wear is evident, the board should require him to have necessary corrections made before granting new tires."

Probably as the result of Mr. Dammann's suggestions, State of New York Rationing Director Maurice F. Neufeld ordered local boards to check on wheel alignment and balance of applicants' automobiles before issuing tire certificates.



Unbalanced and misaligned wheels must be corrected if the retreaded and new tires going into service are to last out the war

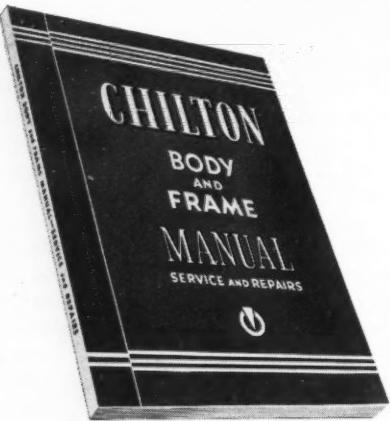


On April 30, the OPA announced that List A vehicles would not be allotted new tires if it appeared that recapped tires were practical. In addition, local boards were given authority to refuse either new or retreaded tires for "those who have not given proper care to the tires to be replaced."

Every serviceman has long known that running on a tire on a wheel that is out of line or is unbalanced is not giving that tire proper care. From the foregoing, it is evident that rationing boards are awakening to this fact.

The serviceman's part in this vitally necessary campaign to conserve rubber is two-fold. He must impress upon the owner that his present tires can give him the maximum service only when wheels are properly aligned and balanced. He must remind the owner that can otherwise qualify for new or recapped tires that his application may be turned down unless he can prove, through having his wheels aligned and balanced, that he has taken proper care of his old tires. The serviceman that meets this obligation is not acting selfishly; he is helping to conserve victory-vital rubber.

SPRAY GUN TIPS



Here are the reasons why spray guns sometimes develop trouble and the ways to eliminate them

This article, and others in Motor Age, incorporated in the Chilton Body and Frame Manual.

THE man behind the gun has spent hours in learning how to use it, and this applies just as much to guns used for spray painting as it does to guns used by the armed forces of the country.

Some of the difficulties of spray painting are caused not so much by lack of skill on the part of the operator as upon the condition of the equipment. Too much or too little air pressure, dirty passages in the gun, leaking connections and worn-out equipment are some of the problems which the spray painter must be prepared to overcome if he expects to turn out work that's really first-class work.

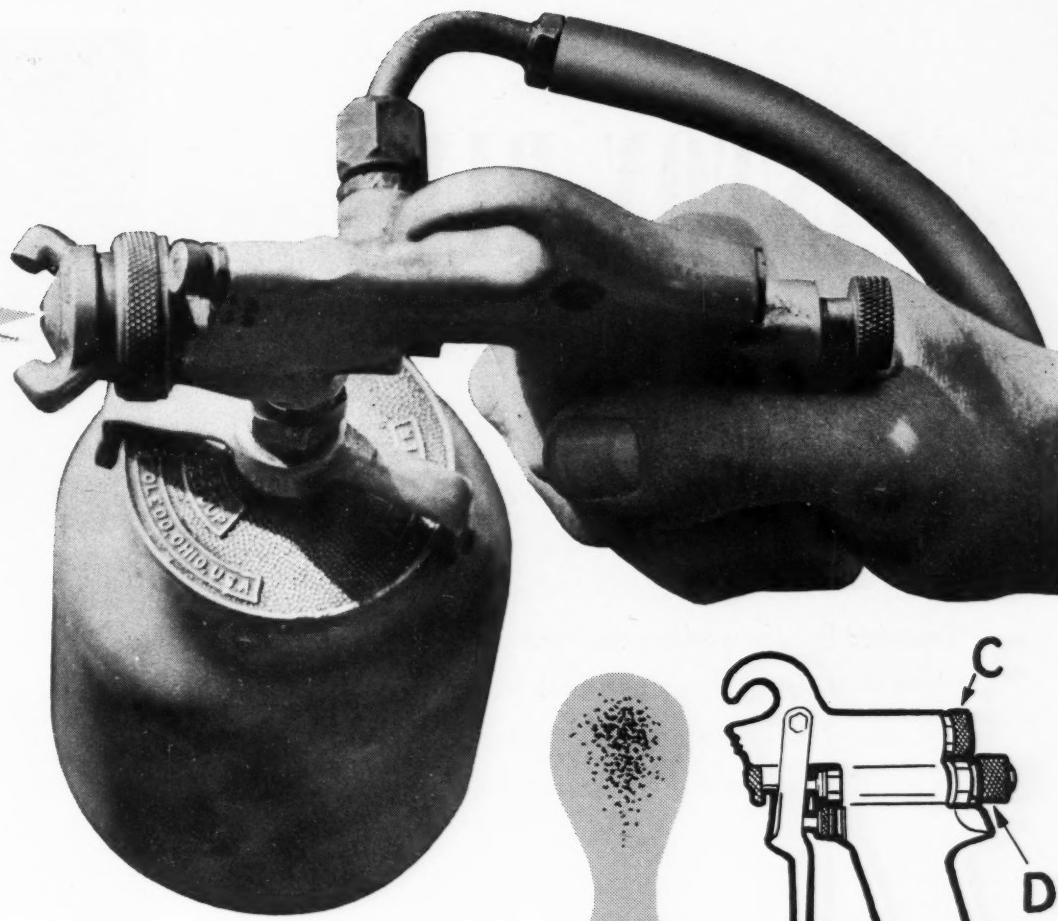
Generally speaking, average synthetics and lacquers require from 50 to 60 lb. air pressure to spray properly. The first requisite, therefore, to good spray painting is an air compressor that will maintain

a steady flow of air at that pressure. Heavier synthetics and heavy-bodied lacquers require greater pressure, and should be sprayed at from 60 to 75 lb. pressure.

A rather common trouble is an improperly shaped spray pattern. Illustration in Fig. 1 is an example of a split spray, or one that is heavy on each end of the fan pattern, and weak in the middle. This is usually caused by too high an atomizing air pressure. Cutting down the air adjustment will usually overcome this trouble. Sometimes, however, a split spray may be caused by trying to get too wide a spray pattern with thin material. Opening the material-control valve to the wide-open position, and at the same time reducing the opening of the spray control valve will round out the pattern, although it will reduce the width of the spray.

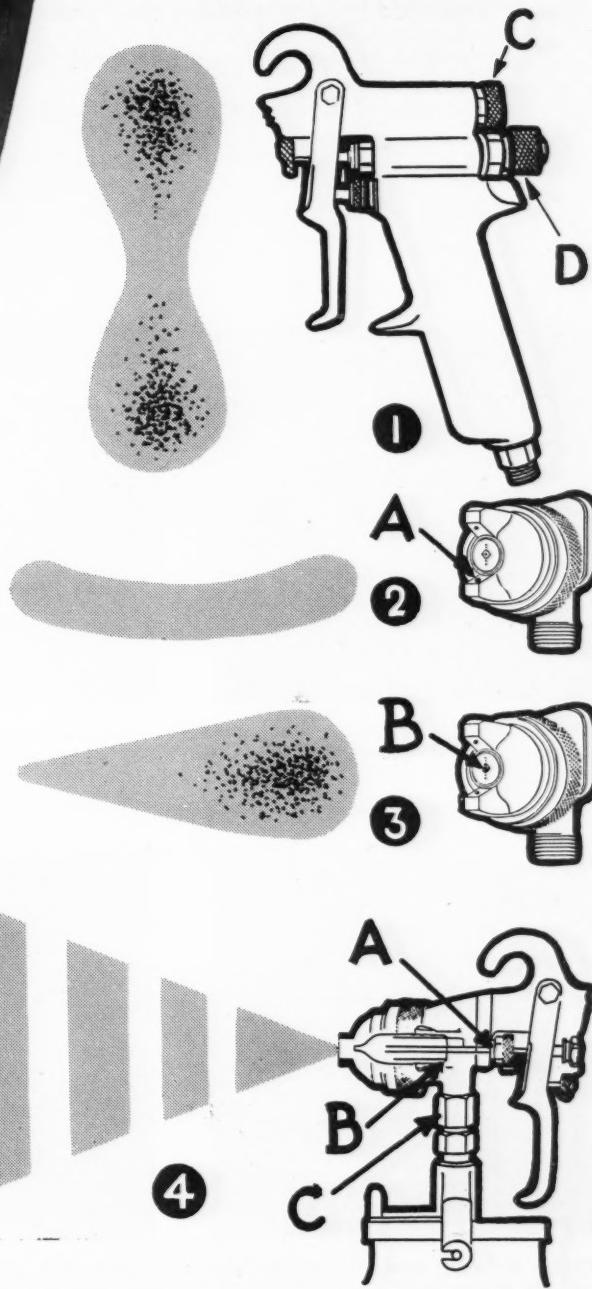
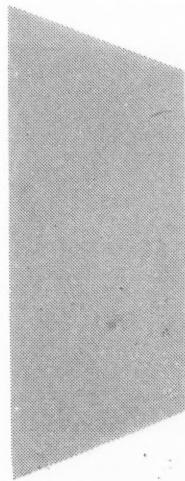
An obstruction in one of the air passage ports will result in a pattern similar to that shown in Fig. 2. The position of the pattern will indicate which port is clogged. (In the illustration, port "A" is the offender.) It can be cleaned either by dipping the end of the nozzle in thinner, or simply by placing a few drops of thinner in the port. Thinner will dissolve the dried material which is plugging the port. Never use a piece of wire in an attempt to clean out a clogged passage.

The pattern shown in Fig. 3 can be caused either by dried material around the outside of the fluid nozzle tip or by a loose air nozzle. If the obstruction is at the fluid nozzle tip, shown at "B" in the illustration, remove the nozzle and wipe off the tip with a rag wet with thinner. If the nozzle is loose, tighten it.



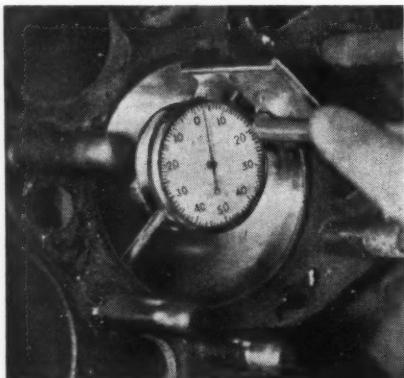
Spitting is another common headache for the spray painter. It produces a pattern like that shown in Fig. 4. There are three principle causes: Dried-out packing around the material needle valve "A" permitting air to leak into the fluid passage; dirt between the fluid nozzle seat and the gun body or a loosely installed fluid nozzle; a defective swivel nut on the syphon cup or material hose.

If it is due to dried packing, back out the knurled nut and put two drops of machine oil on the packing, tightening the nut only finger-tight. If this does not correct the trouble, it will be necessary to replace the packing. Dirt between the fluid nozzle seat and body can be cleaned out by removing the nozzle and cleaning the nozzle seat and the gun body with a rag that has been wet with thinner.



PISTON RING SERVICE

Here is a quick ring job that will restore compression, improve gas mileage, and control oil consumption. It is exactly the kind of service needed by war workers and others who cannot afford to be without personal transportation to keep their cars in economical operating condition throughout the emergency.



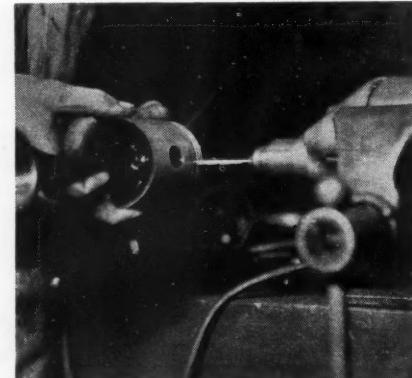
Check cylinders for wear, out-of-round and taper to find replacement ring size.



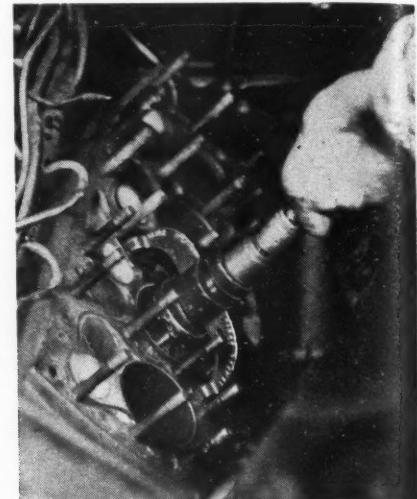
Remove the old rings and clean the carbon off the head of the piston.



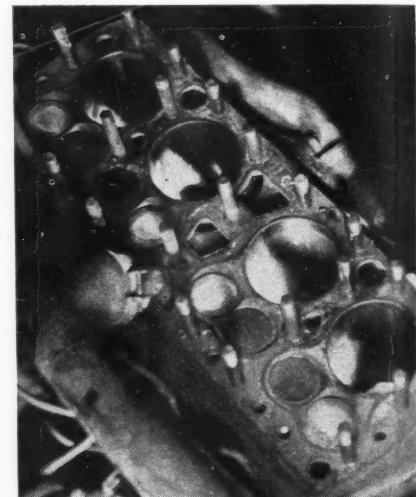
Clean the ring grooves carefully and check side clearance of new rings.



Clean the oil-drain holes, being careful that drill does not damage ring lands.



Use a ridge reamer to remove ridge formed at the top of the cylinder.

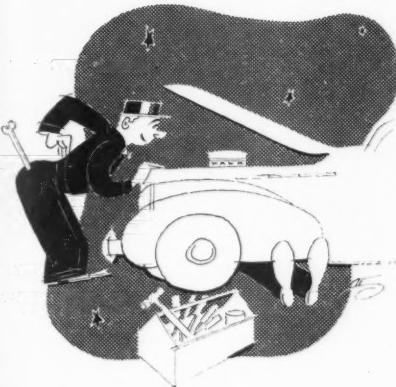


Remove pistons, examine the cylinder walls for scratches and score marks.



Install new rings and expanders, and check for free fit in the grooves.

SERVICE KEEPS DEALERS GOING



"**B**USINESS is good! And not just our service business, either. All our business is good!"

Know who told us that? Car dealers—lots of dealers. In fact more than 20 per cent of those questioned in a recent survey of ours told us that their business was swell—all of it. Another 45 per cent said that, in spite of practically no car sales, their service business was holding up well enough to make the over-all picture look fair or better. Only 35 per cent—or a few more than one third classed business as "poor" (or worse!).

The general opinion expressed by these dealers is that the most natural and most dependable answer to their current problem lies in service, and all these men whose business is good today have one thing in common—they know how to merchandise service. They not only know how, but they are merchandising it in every conceivable way. They're dramatizing the "How" of service by putting service equipment out in the front show windows. They're making every reasonable extra concession to service customers. The things these dealers are now doing are the same things that businesses catering to women have been doing for years, and we couldn't help but notice the number of women we saw going in and out of these service stations. These men are learning that the money spent by women drivers is



Survey shows majority doing fair business despite ban on new cars

By ROSE LU GOLDMAN

just as good as the money spent by men, even though it may be a little harder to get, due to competition from the dress shops and the beauty parlors.

If your service business could stand a little increase (and apparently 90 per cent of you could, for

only about 10 per cent of the shops we talked to were turning business away) why not try a couple of these "feminine customer catchers" which your own fellow dealers have proved and recommended? These men honestly can say that business today is good! Can you?



Dipping army shovels in "prime tanks" in the painting department. Drying racks were made in the dealer's shop.

A DEALER

PRODUCES for WAR

**His offer to relieve bottlenecks for bigger plants
brings him enough work to tax his shop's capacity**

THE chairman of the board of an automobile manufacturing company was asked not long ago, "How many dealers do you think will survive the war?"

He replied, "All the smart ones."

Webster Brothers-Labadie, Ltd., Windsor, Ontario, one of Canada's largest Ford dealers doing a million dollar business annually, is proving him right. When the cut in new-car production was made last December, this firm was faced with the problem of finding new revenue to

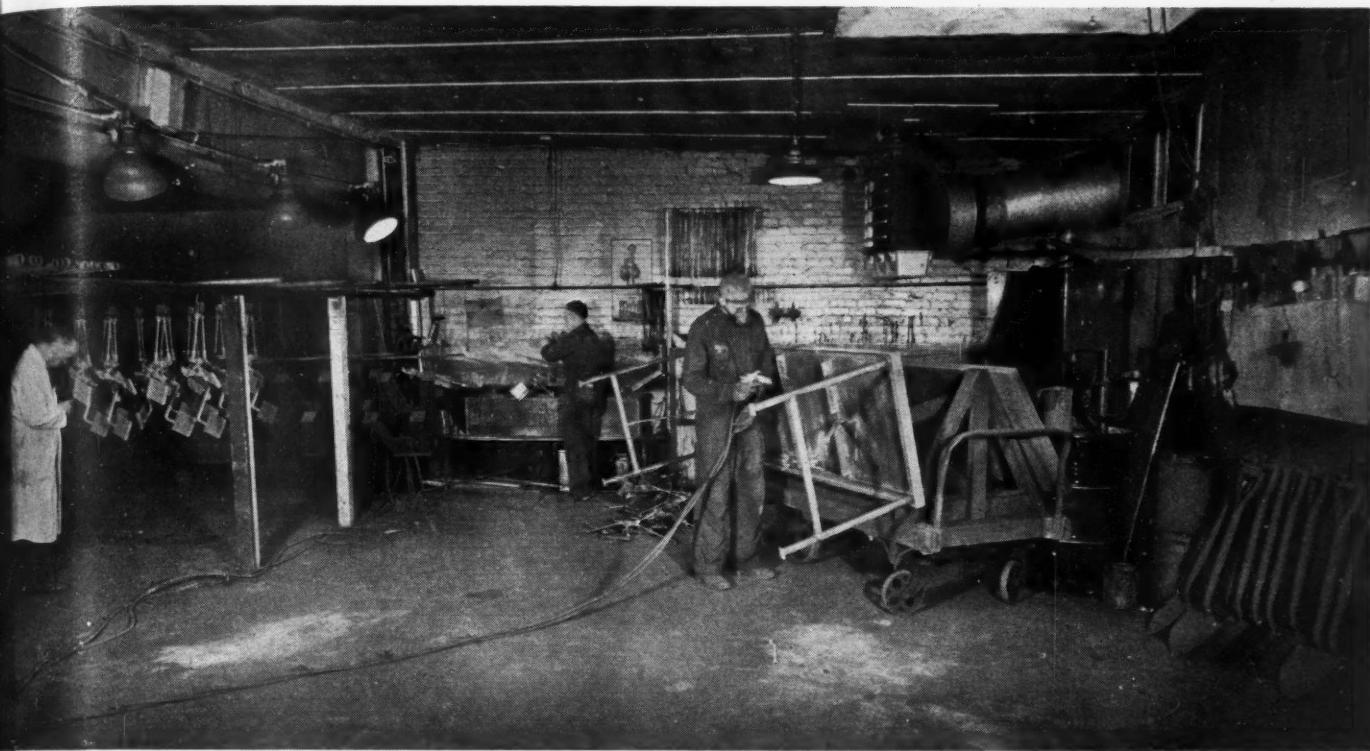
By M. W. BOWMAN

meet its immense overhead. New cars would soon be sold and the few used cars that could be bought would not be sufficient to keep it going. Gas and tire restrictions, it feared, would soon affect its service department and parts sales.

The company had one invaluable asset — amicable connections made in pre-war days with many small

manufacturers and machine shops now busy turning out war material. The new-car salesmen were instructed to recheck these plants, not with the idea of selling cars and trucks, but to find out if there were any bottlenecks developing that could be relieved by their Ford dealer.

The sales force found that the small manufacturers were nearly all making war material and, as most of this material was for army trucks, it had to be painted. To



Spraying army mechanics' portable benches with a prime coat in the corner of shop that was used in pre-war days to repaint second-hand cars.



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be painted, it had to be degreased and cleaned. This operation took too much previous time and floor space. New painting and cleaning equipment had to be purchased, and, if obtainable, was added expense.

Here was work Webster Brothers-Labadie, Ltd., could do. The large building the firm had used for the thorough reconditioning of used cars and the equipment in it could now be kept as busy as hitherto.

"Suppose we take this degreasing

and painting business off your hands?" they suggested to the manufacturers.

The machine shops welcomed the idea; it would mean that they could devote their entire time and floor space to the actual manufacture of parts.

It was not necessary for the dealer to make any but minor changes in the shop, nor was it necessary to add additional machinery.

The large spray booth formerly

used for spraying used cars is now used for painting war material. The same heating system used for drying cars is now used for drying parts. A dip tank was installed to handle parts that could not be sprayed satisfactorily. Some experimentation was necessary, of course, to find out which parts could be dipped and which could be sprayed. Storage racks had to be built to hold the painted parts while they were drying. In part of the painting departments, piping was hung about 2 ft. down from the ceiling from wall to wall so parts could be hung to dry.

Large tanks for degreasing and cleaning parts now cover the floor of the wash rack. After cleaning, steel parts are treated with an acid solution to "prepare" them for painting. A hot-water rinse is the final cleaning process. The water in this rinse tank is heated from the coils of a cleaner which was formerly used to clean automobile motors and chassis.

The sewing machine and equipment in the trim shop, formerly used to repair car upholstery, is now sewing instrument cases which will ultimately protect certain

(Continued on Page 48)

10 WAYS TO GET BRAKE WORK

An unusually successful shop uses its own plan of attracting a huge volume of brake service and making satisfied customers

By A. E. HOLDEN

INE of the busiest automobile repair shops in Fort Wayne, Ind., is Martin's Brake and Electric Service. One of the largest and best-equipped places in town, it has enough work to keep it occupied 24 hours a day. Sixty per cent of the work handled by the shop is brake service.

Ask John D. Martin, the proprietor, how he manages to keep so many brake jobs rolling through the door and he will give you ten reasons:

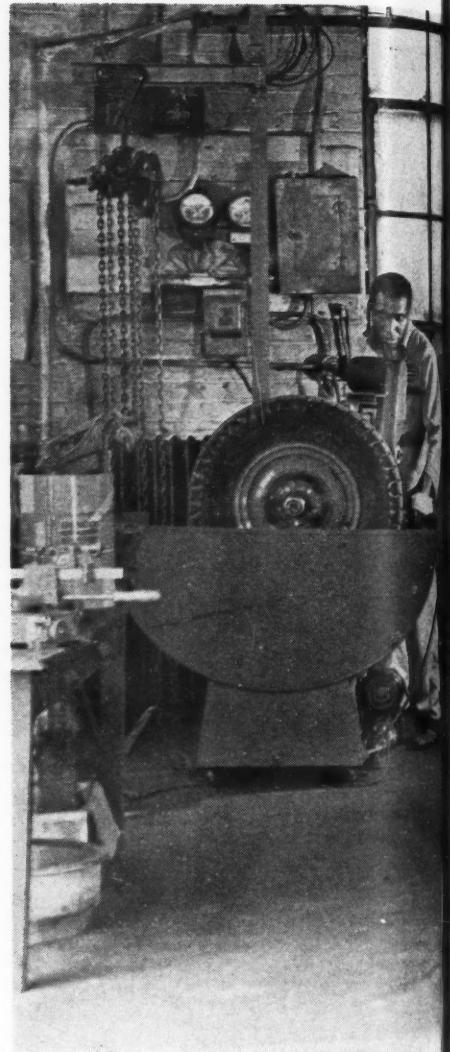
- Never sell a customer a job, replacement part or a gadget he does not need.

- Train all mechanics to sell goods and services honestly when and as needed. Check carefully to see that work charged for has been done, that parts on the invoice went into the job.

- Don't hesitate to recommend needed work, but be prepared to demonstrate its need and to let customers to see the work done when they wish.

- Employ flat-rate policy, but keep it flexible enough to satisfy customers yet guarantee a fair profit.

- If need for extra parts is discovered as work progresses, notify



A corner of the Martin brake shop, which

the customer before installing them.

- Advertise your shop through continuous use of moderate space in newspapers.

- Make outside contacts with fleet owners and repair shops and follow up prospects among private car owners.

- Carry parts and products that will give customers the best performance at the lowest operating costs.

- Sell through the use of testing devices that show the customer the need for work.

- Diversify the service facilities to conform to the needs of passenger-car and truck owners.

Great stress is laid by Martin on point No. 1. Ever since he opened a shop, Martin has based his service upon the belief that honesty is the best policy. That, combined with efficient mechanics, trained to operate precision analyzing and



is kept busy 24 hours a day. Of all the shop's work, 60 per cent comes from brake service.

repair equipment, makes the most effective method of attracting and holding a profitable group of customers.

Martin has a long list of steady repeat customers to prove his theory right.

"Last summer a woman wanted the brakes of her car relined for a Western trip. The price we quoted satisfied her, but later on we found that the master cylinder needed overhauling—a \$5.50 job. When we told the woman, she said we were just like all repair shops—always finding something extra to do to gouge the customer. We repeated our warning that the work should be done. We explained that it would save her money and trouble later on, but she insisted that we reline the brakes as ordered.

"A couple of weeks later she was out on a lonely mountain road and her brakes failed. It cost her \$18

before she got them working again. Since that time she has been a regular customer. She always accepts our recommendations and boosts our service to her friends.

"A Chicago tourist came in last summer and asked us to reline his brakes. We inspected them and found the lining was good for 10,000 more miles of safe service. He was grateful and said so. A few weeks later he dropped in and bought a complete lubrication job and a motor tune-up. To our personal knowledge, he has sent friends to us for service work."

Lubrication accounts for 10 per cent of the shop's volume. Tune-up, wheel aligning, steering gear, motor overhauls, body work, and battery and ignition make up the other 30 per cent. The shop is fully equipped to handle every one of these classes of work. Martin loses no opportunity to call the at-

(Continued on Page 74)

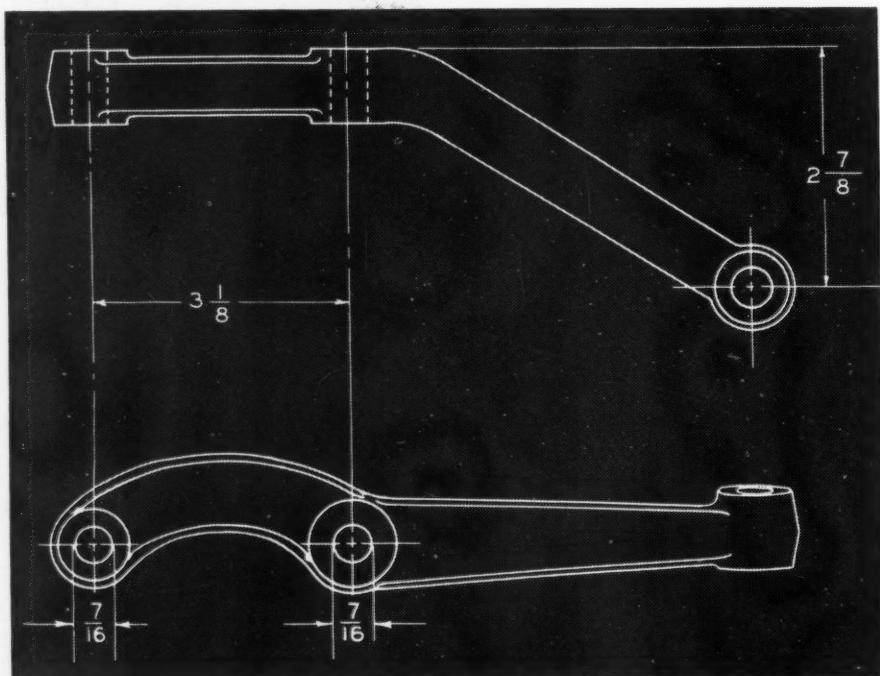
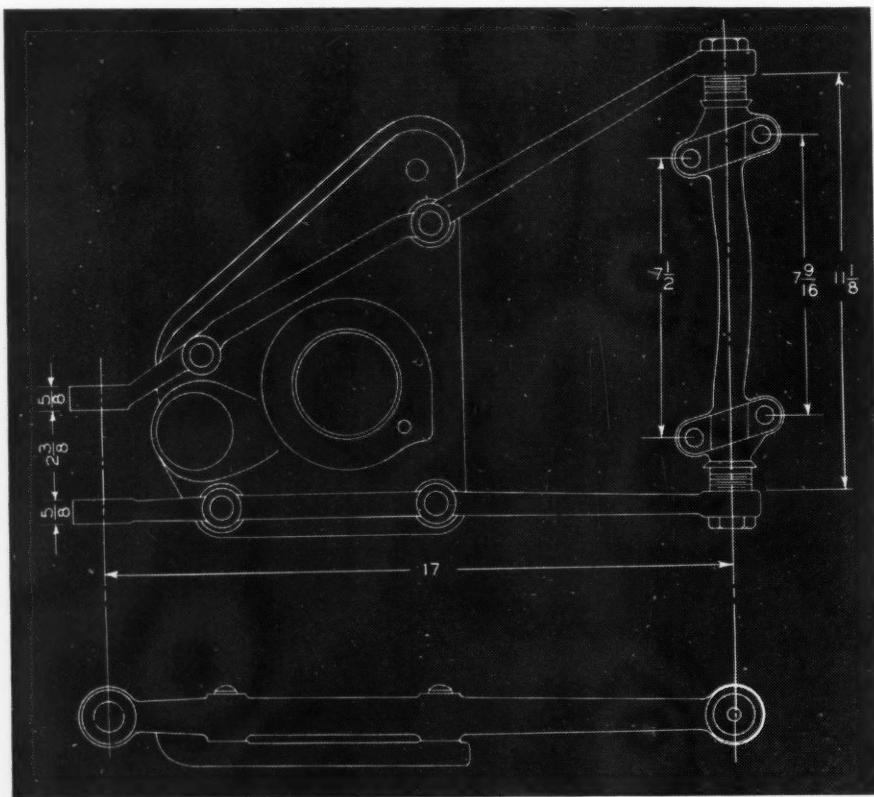


One of the lubrication lifts where 10 per cent of the shop's business is done, and where need for other work is discovered.

Exterior of the Martin shop in Fort Wayne, Ind., familiar to hundreds of the city's car owners who have learned to place absolute confidence in its fair dealing.

KNEE ACTION SERVICE

All the facts and figures you need to restore the original specifications of front suspension parts



WHEN installing either a new or a repaired lower control arm of the 1942 Chevrolet front-wheel suspension, be sure that the shaft bracket with the letter "F" stamped on it is toward the front of the car. Also, it is important that a new oil seal be installed on each end of the shaft to prevent dirt from working into the threads of the pilot bushings. The threaded bushings should be installed so that the shaft will be centralized between the yoke formed by the two arms.

Screw the lower pivot-pin bushing in the steering-knuckle support arm, and place a new oil seal in the groove in the rear of the bushing. Install a new seal over the end of the front lower control arm. Then start the lower pivot pin into the front lower control arm, being careful to see that the steering-knuckle support arm is centrally located in the yoke formed by the ends of the lower control arms when the pivot pin starts into the pivot pin bushing. When the pivot pin starts into the rear lower control arm, be sure that the threads index easily, without spreading the yoke. If they do not, use a "C" clamp to compress the yoke slightly to permit the threads to index. Continue tightening the pivot pin until the head is snug against the front arm. Then pull the front oil seal over the end of the arm so it will cover the threads, and slip the rear seal off the pivot pin bushing so it also will cover the threads.

The pivot pin in the upper end of the steering-knuckle support arm should be installed with the support arm centered in the yoke formed by the upper control arms. The rear bushing is installed first, and then the front bushing is turned in. Do not tighten the front bushing against the front control arm, but

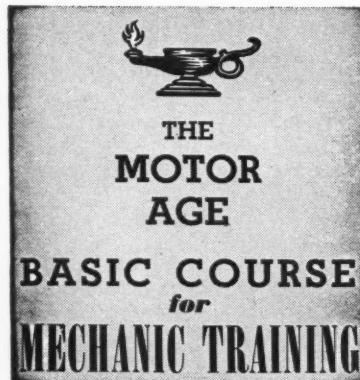
(Continued on Page 62)



"Do you want the shortest route to Atlanta or the most scenic one?"

FASTER TRANSMISSION WORK

**There may be several ways of doing
a job but Pop O'Neill's apprentice
learns there is only one right way**



By J. EDWARD FORD

"**T**HINK you can handle it alone?" asked Pop O'Neill. Chuck Masters, torn between pride and realization of the work disassembling a transmission meant, took another look at the panel delivery truck, and grinned. "Sure," he said.

"I wouldn't ask you to do it," said Pop, "only we're short-handed today and this job has to be done this afternoon. It's Wednesday and that's the only time Al Toomis,

the grocer, can lay his truck up."

"What do ya want me to do after I get it disassembled?"

"From the way it's been actin', said Pop, "I'd say we'd have to replace the spline shaft. It's noisy and jumps outa second gear. That sounds like worn splines. But we'll have to see when you get it disassembled."

"O. K." As Chuck went over to get a floor jack, Pop returned to the lathe where he had been turn-



ing down an armature. This was one of his hard days. The new man he had hired was working out a few days' notice, and one of his regular mechanics had come down with a spring cold. But Pop had been raised on hard work and thrived on it. As he worked, he watched Chuck out of the corner of his eye. Presently he saw Chuck drag the transmission from beneath the truck and carry it to a bench. Pop strolled over.



"I was right for once," he said. "Look at them splines—shot all to pieces. Well, drive out the main shaft and gear so we can get at the rest of it."

"You mean the clutch shaft?" asked Chuck.

Pop scratched his white-thatched head.

"So you're gonna bring that up, too?" he said. "You know, kid, there ain't a part on an automobile that's got as many names as the

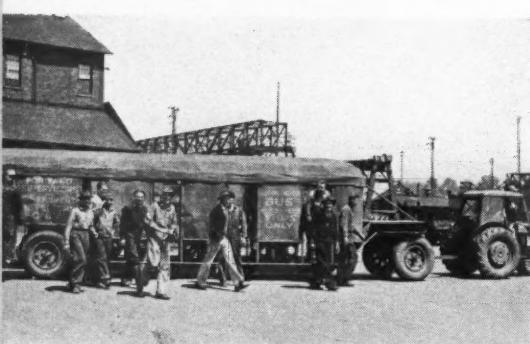
parts of a transmission. I just called that shaft there the main shaft. You called it the clutch shaft. It don't make no difference, I guess, but it certainly would be a help if everybody had the same name for the same part."

"In school," said Chuck, "we always called the rear shaft the main shaft."

"Lots of people do. But a better name for it is the spline shaft. Even the countershaft ain't always

called that. I've heard some people call it the lay shaft. As long as we're gonna work together, we ought to get together on names. We'll call the shaft that comes from the clutch—the one with the single fixed gear—the main shaft. And the one with the sliding gears—the one that connects with the universal—the spline shaft. And the countershaft is always the counter-shaft. How's that?"

(Continued on Page 49)



NEWS

PARTS REPRIEVE

ALTHOUGH parts production for the period April 1 to June 30 was severely curtailed by the WPB order of May 5, the net effect upon the industry will not be anywhere near so drastic. The reason, of course, is the fact that the deadline upon parts making is now delayed from June 30 to September 30.

Originally, parts makers were to be allowed to produce in the first six months of this year 150 per cent as

many parts as they sold in the entire year of 1941. Thus, for the six-month period, the rate of production was to be three times as high as during the corresponding period of last year. The new curtailment order sets the limit for the present quarter and for the quarter ended Sept. 30 at 70 per cent of the corresponding quarters of 1941.

Further, only functional parts, that is, parts that are indispensable in the actual operation of the car, may be made. These include engines, clutches, transmissions, propeller shafts, universal joints, axles, hubs, brakes, wheels, drums, starting apparatus, spring suspensions, exhaust systems, shock absorbers, cooling systems, fuel systems, lubricating systems, electrical systems (including generators, lights and reflectors), gages, speedometers, rear-view mirrors, windshield wipers, windshield wiper motors, control mechanisms, and steering apparatus. Manufacturers of other parts and accessories were ordered

HORSE LAUGH. Max Korman and his horse "Babe" enjoy a laugh at the expense of the car owners lined up at a New York City high school to get gas ration cards.

TOKIO EXPRESS. That's what ship workers at Newport News, Va., call these converted World's Fair sightseeing buses, which are used to haul key men around the shipyard.

DRAWING THE LINE. On one side, in Wayne Co., N. Y., driver shows ration card to get gas. On the other in Monroe Co., a purchase is made without restrictions.

CROCODILE BOATS. Bows of Marines' new landing boats drop on reaching beach, forming a ramp for mechanized equipment.

SEA JEEP. The Army's new amphibian vehicle crosses a 40-foot-deep stream. It equals the regular jeep's speed on land.



DETROIT LETTER

By ED WARNER

halted at the time the order was issued.

The cut is staggering when expressed in percentages, yet if a manufacturer was able to produce up to the limit in the first quarter and can continue to produce up to the limit until Sept. 30, he will have made 10 per cent more parts than in the same period last year. Under the old plan, since he could have made nothing after June 30, his total production as of Sept. 30 would have been 200 per cent more.

The gimmick in this reasoning, however, is that almost no manufacturer was able to produce up to the limit in the first half or in subsequent months. A great many difficulties stood in the way. It was extremely difficult to triple the force of skilled workers, machine capacity was limited, and materials were hard to get under A-10 priority. Furthermore, the program required a huge investment in inventory and created a tremendous storage problem, for only a frac-

AS the present world conflict is a war of machines, it is natural that the Army and Navy need a multitude of mechanics to service the engines and other intricate war weapons that are being turned out by former automotive plants. The automobile companies are cooperating in this work by providing instructors and facilities for the members of the armed forces.

One of the first of such schools was that operating through the Fort Wayne Quartermaster Motor Base in cooperation with four automotive companies in the Detroit area. This school was opened in April, 1941, by the War Dept. to train officers in practical operation and mechanical problems connected with the Army's

military vehicles. After four weeks of such schooling, the officers returned to their various camps and posts throughout the country to become instructors of the enlisted men who drive and service the Army's 200,000 motor vehicles. Ford, Dodge, Chevrolet and General Motors Truck, four of the largest producers of trucks in the country, cooperated in this effort, the future officer-instructors spending a week at each company studying its product. There were 30 officers in each class. This school was discontinued in December, but the training continues at base camps throughout the country. A total of 1,200 officers received instruction during the nine months.

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tion of the production could be passed along to jobbers.

In the end, it is not unlikely that actual production under the new limitation order will approach the level actually attained under the much higher limit originally authorized.

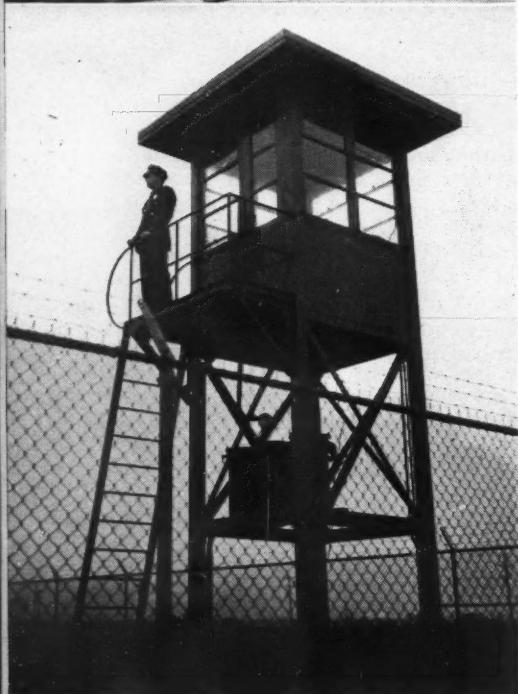
ANTI-FREEZE

AFTER the alarm over anti-freeze last fall and winter, the WPB order limiting the production comes as a surprise. The order raises no hopes of an abundance of anti-freeze

RETAIL PROTEST. These gasoline retailers chip in at a meeting of New York dealers to finance efforts to soften blow of the rationing order. The dealers protested the severity of the order.

SENATE RATION. Senators Brooks, Illinois, Wagner, New York, and Hatch, New Mexico, sign up for gas cards. Some Senators riled motorists by demanding X cards for unlimited quantity.





News

for next winter, since the cut is expected to be 50 per cent of the 1941 sales, but it does suggest that the situation will not be so bad as it has been painted. Together with the anti-freeze that was drained in the spring and kept for re-use next fall and conservative use of the fresh anti-freeze available, the quantity permitted to be made for civilian use may bring no great hardship.

The order affects ethyl and methyl alcohol, isopropyl alcohol as well as ethylene glycol.

INVENTORY

LIMITATION Order L-63, which was issued by WPB in April to limit the inventory of jobbers, has been amended to exempt tires, tubes, and automotive replacement parts. The amending order, known as Exemption No. 3, was issued May 12.

A further relaxation of the order permits the supplier to accept delivery of specific items even though receipt of the shipment will give him a total

PETROLEUM TIRE. First of the tires made by the U. S. Rubber Co. from a petroleum derivative goes on a bus in New Jersey to test its wearing quality in actual use.

MOTOR SENTRY. Buick Motor Division plant assumes warlike appearance with guard towers, alarm system, and spot lights.

inventory in excess of his otherwise permissible limit. This may be done, however, only to bring the inventory of the particular item up to a total dollar volume equal to the sales of such items shipped by the supplier the previous month. Consigned stocks must be included in the inventory.

HOW IT WAS DONE

LAST July, the *Reader's Digest* published a scathing article on automobile repairmen under the damning title of "The Repairman Will Get You If You Don't Watch Out." Now this article, combined with attacks upon the honesty of radio, typewriter, and watch repairmen, has been republished in a book that bears the more inclusive but still unflattering title of "Repairmen Will Get You If You Don't Watch Out." It is authored by Roger William Riis, who signed the articles, and John Patric, who did the leg work.

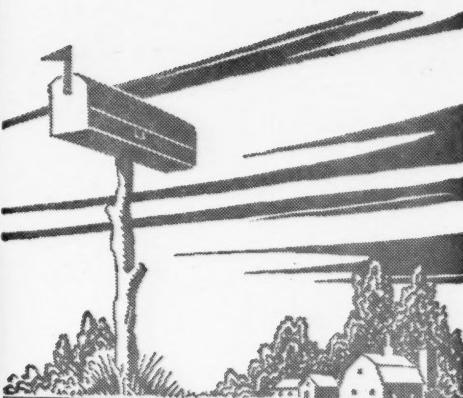
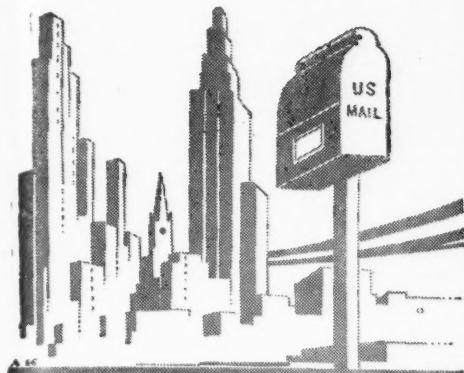
Anyone who was irritated by the charge in the original article that 63 per cent of all automobile repairmen are gyps should read it again in its new dress; it won't soothe him but he will learn how sweetness and light are shed over a wicked world when an earnest crusader rolls up his sleeves.

The indictment of the automobile service industry was returned by a jury of two, John Patric and his tem-

(Continued on Page 92)

New Passenger Car Registrations

	FEBRUARY 1942	JANUARY 1942	FEBRUARY 1941	TWO MONTHS			Per Cent of Total Two Months		FIVE MONTHS MODEL YEAR		
				1942	1941	Per Cent Loss	1942	1941	1942	1941	Per Cent Loss
Chevrolet	4,457	13,922	73,488	18,379	144,427	87.2	21.94	24.19	129,576	376,322	65.6
Ford	3,062	9,918	54,088	12,980	104,877	87.8	15.49	17.56	91,363	247,860	63.1
Plymouth	2,181	7,876	34,502	10,057	69,711	85.6	12.00	11.67	68,171	186,301	63.4
Buick	1,537	5,643	24,391	7,180	50,652	85.6	8.57	8.48	49,433	139,644	64.6
Pontiac	1,365	4,714	23,759	6,079	46,074	87.0	7.26	7.71	46,132	117,610	60.7
Oldsmobile	1,229	3,764	19,604	4,993	38,850	87.0	5.96	6.50	35,057	75,466	53.5
Dodge	1,021	3,943	15,176	4,964	31,824	84.5	5.93	5.33	35,864	99,104	63.8
Studebaker	775	2,710	7,530	3,485	15,521	77.6	4.16	2.60	19,873	42,438	53.1
Chrysler	573	2,169	10,404	2,742	21,204	87.0	3.27	3.55	22,240	48,813	54.5
Hudson	487	1,679	5,156	2,166	10,540	79.3	2.59	1.76	12,386	30,869	60.0
Nash	465	1,689	6,594	2,154	12,201	82.0	2.57	2.04	13,382	25,328	47.2
Packard	396	1,593	4,082	1,989	8,576	76.8	2.37	1.44	17,468	27,113	35.6
De Soto	399	1,544	6,023	1,943	12,155	84.0	2.32	2.04	14,155	30,074	52.8
Mercury	403	1,534	6,824	1,937	13,884	86.1	2.31	2.32	14,155	33,479	57.7
Cadillac	513	1,005	4,685	1,518	9,830	84.6	1.81	1.65	11,077	23,709	53.5
Lincoln	190	472	1,544	662	3,183	79.3	.79	.53	3,983	8,646	53.9
Willys-American	102	373	1,497	475	2,985	84.0	.57	.50	3,305	7,831	57.8
Crosley	22	53	26	75	68	+10.0	.09	.01	405	179	+126.0
Miscellaneous			2	328	2	697			12	195	92.2
Total	19,177	64,603	299,701	83,780	597,259	85.9	100.00	100.00	588,200	1,523,257	61.4
Chrysler Corp.	4,174	15,532	66,105	19,706	134,894	85.9	23.52	22.58	139,623	340,654	50.0
Ford Motor Co.	3,655	11,924	62,456	15,579	121,944	87.3	18.60	20.42	109,501	289,985	62.2
General Motors Corp.	9,101	29,048	145,927	38,149	289,833	86.7	45.53	48.53	272,082	756,388	64.0
All Others	2,247	8,099	25,213	10,346	50,588	79.6	12.35	8.47	66,994	136,229	50.9



Bill Toboldt, Editor, Motor Age

THE READERS'

CLEARING HOUSE of Servicemen's Queries

PISTON PIN KNOCK

We have a 1941 Studebaker Champion in our service department that has a very pronounced knock in the motor when it is at idling speed. We have not taken down the motor or done any testing except that we have noticed the oil pressure is zero when engine is idling. Whether that is the proper reading or not we do not know. Shorting out No. 1 cylinder, which we believe the knock is in, has the effect of doubling the knock sound, whereas when the engine is idling free it occurs at every stroke. Forgot to mention that at road speeds the oil pressure holds at 40 lb. and it is using a No. 20 oil at speedometer reading of 12,000 miles.

If the above explanation can help you solve the trouble on this car, we will be very thankful to you for your report.—J. Maslowski, Stevens Point, Wis.

REGARDING the 1941 Studebaker Champion, which has a knock in the engine at idle speed, I believe you will find this to be caused by a loose piston pin. The piston pin is locked in the rod by a tapered pin having a

nut on each end. To remove the pin so that you can drive out the piston pin, the procedure is to remove the nut from the plain end of the tapered pin and then tighten the nut on the slotted end of the tapered pin. This will act as a puller and draw the tapered pin from the connecting rod.

I suggest that, before you pull this connecting rod and piston assembly from the engine, you drop the pan and attempt to tighten the piston pin's lock pin. This can be done by using a box wrench and reaching up inside the piston. Loosen the lock nut on the slotted end of the pin and tighten the

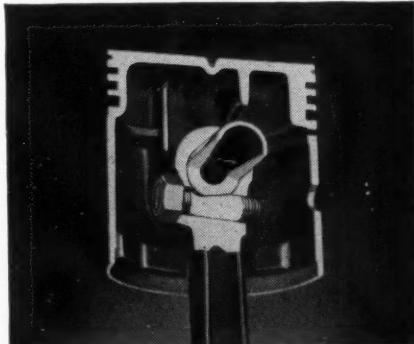
other one to see if you can draw this tapered pin tighter into the connecting rod. It may be that this noise is caused by this tapered pin being loose rather than looseness in the piston pin fit itself. If, however, tightening the tapered pin does not correct the trouble, then it will be necessary for you to pull the rod and piston out and fit a new pin.

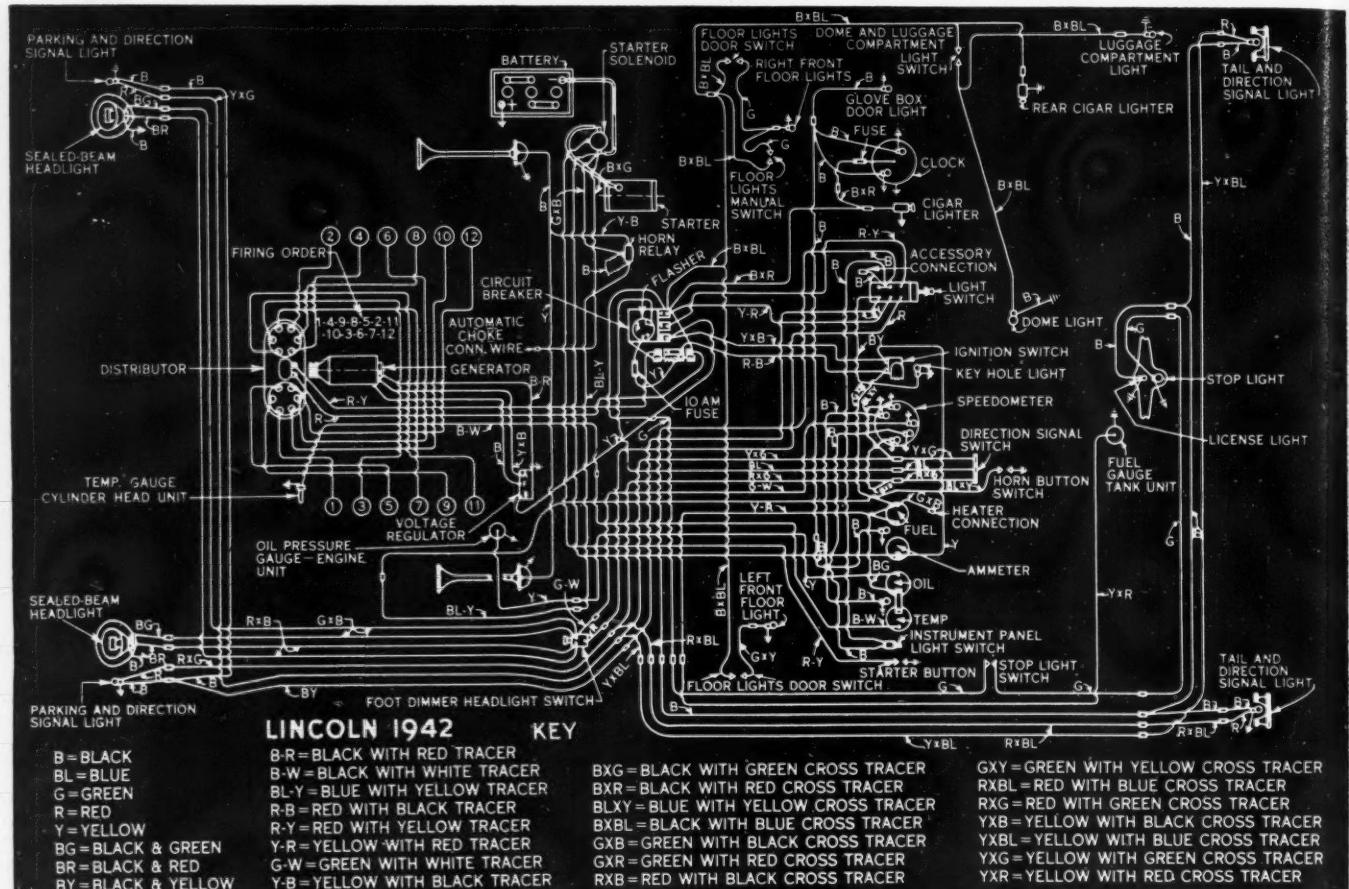
An oil pressure gage reading of zero at idle speed is all right provided the gage reads between 20 and 40 lb. at 40 m.p.h.

STICKING VALVES

I have a Lincoln-Zephyr, and I cannot keep the hydraulic valve lifters from sticking. Have taken them out twice and cleaned them well and re-installed them and, after running a few hours, they stick again. I made sure not to get them mixed up and all cylinders seem to be free and work easily after washing them out. Ball check is free.

When I took car down and put in rings, the cylinder walls were brown, and the lifters were the same color.





Wiring diagram—1942 Lincoln

It had some water in the valve chamber but not much. I wonder if the anti-freeze has leaked through the gasket and gummed it up. The valve lifters were sticking when the car came in. We have cleaned out the line as well as we know how.

Could you advise me just what to do if it is the anti-freeze, how to clean it out or what will cut it loose? I have used tune-up oil and run for some time but does not seem to do the work.—Glen Lunsford, Milton, Iowa.

IN connection with the trouble you are experiencing with valve lifters on the Lincoln-Zephyr, I would suggest that you clean them once more and also drain and flush the entire lubricating system and refill it with clean oil. In addition, install a new oil cleaner.

Inasmuch as there is some indication that anti-freeze has leaked into the crankcase, it is advisable to check the cylinder head gaskets to make sure there is no leak present.

To be absolutely sure that all traces of the anti-freeze have been removed from the oil pan and crankcase, it probably would be advisable to remove the pan and then, with the car on a lift or other raised position, thoroughly wash out the crankcase with a strong stream of water. Then with an air hose be sure to blow out

all water so as to dry thoroughly the interior of the engine.

The continued sticking of the valve lifters is undoubtedly caused by dirt in the oil, and a thorough cleaning of the engine, plus a new oil filter, should overcome your trouble.

PRODUCTION OVERSIZE CODE

Will you please tell us the letter codes used to indicate bearing and cylinder-bore sizes as used by Chrysler and Nash.—Thurk Brothers, St. Bonifacius, Minn.

THE Chrysler marking is used in connection with the engine number of the car and, if the job is standard in all respects, no letter precedes the engine number. The letter "A," followed by the engine number, indicates that the cylinders are bored .020 in. oversize. Letter "B," followed by the engine number, indicates that the main and connecting rod bearings are .010 in. undersize. The letters in the circular bosses following the engine number are for use of factory inspectors and have no relation to the sizes of the cylinders or bearings.

The Nash system of lettering is somewhat more complicated. Piston sizes are indicated by a letter stamped on the piston head. "B" in-

dicates standard size. The letter "A" indicates that the piston is slightly less than standard but not as much as .001 in. undersize. The letter "C" on the piston head indicates that the piston is slightly more than standard in size but not as much as .001 in. oversize. This system of marking follows on through the letters of the alphabet up to the letter "I." For example, "D" indicates slightly less than .001 in. oversize; "E" indicates .001 in. oversize; "F" indicates slightly more than .001 in. oversize; "G" indicates slightly less than .002 in. oversize. The letters "CD" on the piston indicate that the job originally was .010 in. oversize. Letters "CA" indicate that the piston is slightly less than .010 in. undersize. The same letters explained above are used in combination with the letter "C" indicating the extent of oversize from the original .010 in. oversize.

The letters indicating cylinder sizes are stamped on the exhaust pipe boss on either side of the stamped hole for the upper exhaust pipe clamp stud. For example, a letter marked ahead of the front stud hole indicates No. 1 bore size, and the one to the rear of the stud hole No. 2 bore size. Letters on the center exhaust pipe boss indicate No. 3 and No. 4 bores, and on the rear boss No. 5 and No. 6 bores in the same order.

POOR ENGINE IDLE

I enjoy reading MOTOR AGE very much.

I would like to know what type gage you use and how the adjustment is made on the idle port on a 284S Carter carburetor used on a 1935 Chevrolet.

Do you think the points sold by some wholesale parts stores at only a few cents are as good as the genuine parts supplied by the car manufacturer?

Getting back to that 1935 Chevrolet, I put in new rings, ground valves, cleaned out the carburetor with air, and installed a new metering rod and seat, a new accelerating-pump leather, new pump check valves (disc type), new low-speed jet and metering rod arm and rod. I adjusted the metering rod with the proper gage, set the float level to $\frac{3}{8}$ in. I also installed new points and condenser, set the distributor on a synchrograph, timed the engine with a timing light and set the valves at .006 and .013 in.

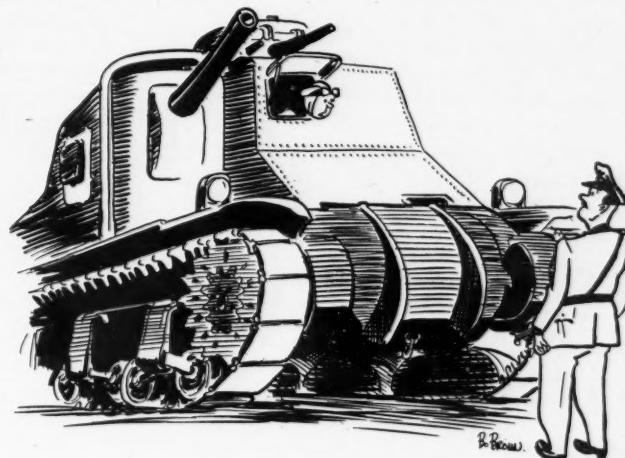
When the job was finished, it ran fine except that it rolls at idle and continues to roll or miss on a steady pull as though it gets gas in spurts. I checked the fuel pump and it had 4 lbs. pressure. I cut it back to 2 lbs., but it didn't help any.

Is it advisable to remove the springs at the bottom of the push rods on this model Chevrolet?—Virgil Smith, Houston, Texas.

I DO not quite understand what you mean when you speak of adjusting the idle port. The only adjustment at this point is the idle adjusting screw, which is turned out to increase the mixture and in to lean it.

In view of the work you have done on this carburetor, I am inclined to believe that the rolling trouble is due to a worn seat on the idle adjusting screw. You mention many parts in the carburetor that have been changed but do not mention that you installed

"It performs all right, sir, but I have to baby it along."



a new idle adjusting screw, and I think that if you will do this, there is a fair chance that you will be able to get a satisfactory idle adjustment for this engine.

Another point you might check is the diaphragm in the octane selector. Occasionally these diaphragms become porous or cracked and permit air to bleed into the manifold, and this affects the idle adjustment.

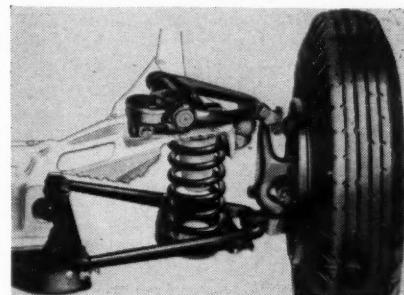
I assume you have set the spark-plug gap at .035 in., and the breaker-point gap at .018 in. These are the figures that should be used for the adjustment of these units, and it is particularly important that the spark-plug gap be carefully set.

I do not think it would be advisable to remove the springs from the lower end of the valve push rods.

Insofar as the quality of breaker points is concerned, I think you get what you pay for, and, if you buy points for just a few cents, I do not think you can expect as long a life from them or quite as satisfactory operation as you can from some standard make.

high-speed shimmy. If they are low on fluid, they lose their effectiveness and permit the wheels to bounce easily.

Your trouble was due to the fact that you did not bleed the air out of the shock when you filled it with fluid. To do the job right, you should disconnect the shock absorber arm from the steering-knuckle support arm so you can move the shock arm by hand. Remove the filler plug and fill the shock with fluid and then work the arm up and down slowly. You will notice that bubbles will come up to the filler hole and break,



indicating that the unit contains air. Work the arm until no bubbles appear, then add some more fluid and work the arm up and down again. Continue doing this until no more bubbles appear, and you can get no more fluid in the unit.

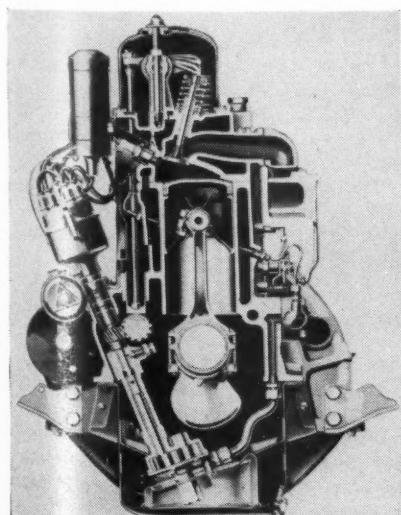
SHOCK ABSORBER SERVICE

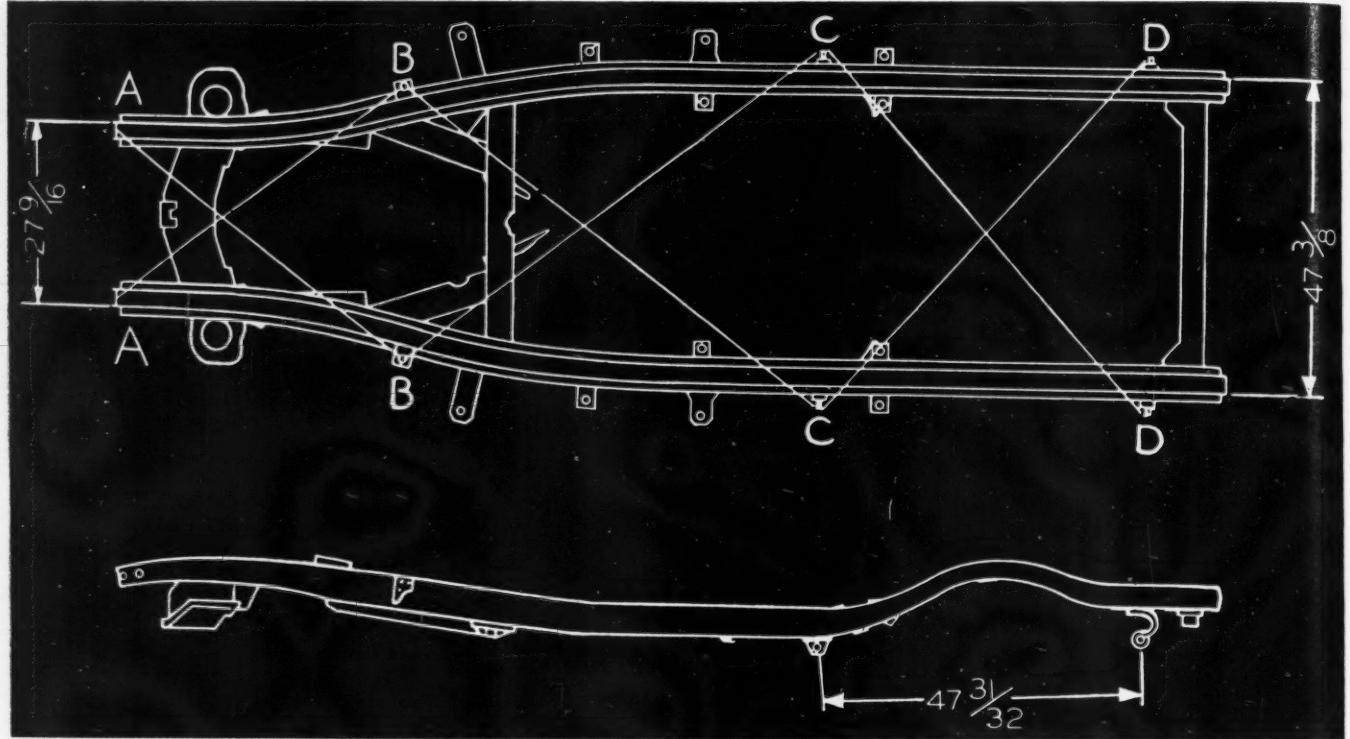
One of our customers has a 90 Series 1937 Buick which has a high-speed shimmy. We have checked the wheel balance, wheel alignment, etc., and everything seems to be in order. We removed the filler plug from the front shock absorbers and filled them with shock-absorber fluid, thinking this might correct the trouble. After a test ride of a few miles, which proved that the trouble was not corrected, we returned to the shop and removed the filler plug again. The shock absorber was apparently low on fluid, although we had filled it full just a few minutes earlier. There was no sign of a leak. Can you tell me what is wrong with these shock absorbers, and whether they affect the high-speed shimmy?—A Tennessee Subscriber.

YES, the front shock absorbers have a very definite effect on

clutch chatter and I installed a new clutch plate, but, after the car has been driven a few days, it chatters as bad as it did before, only in reverse. Going forward it seems to work pretty well.—Gilbert Keogh, Luck, Wis.

REGARDING the 1937 Ford, 60 Series with a chattering clutch, I am inclined to believe this condition is due to loose or worn engine mountings. Loose rear-axle strut rods would also be a contributing factor. An-





1942 Chevrolet Frame Diagram

A to B—61 1/4 in.

B to C—68 1/2 in.

C to D—65 1/2 in.

other point that should be considered is whether, when you pulled the clutch down the first time, you found any evidence of oil in the clutch housing. If you did, you will have to take whatever steps may be necessary to correct the condition which is permitting the oil to get into the clutch housing before you can hope to have a properly operating clutch for any length of time. A new clutch plate will work all right until it becomes coated with oil and then you will have the same trouble over again.

JUMPS OUT OF LOW

One of my customers has a 1940 Dodge. This car jumps out of low gear, and nothing I have done has been successful in eliminating this trouble. I have checked the alignment of the transmission case with the bell housing, installed a new low and reverse sliding gear and a new cluster gear. This had no effect whatever. Everything in the transmission looks to be in good condition, and I would like to have some suggestions from you as to what I should do next.—A Vermont Subscriber.

JUMPING out of low gear is an unusual complaint, but in this case I believe I have the right answer, as I have just had a similar case. The trouble is with the tension of the spring which operates the poppet ball in the low and reverse shifter rail selector notch. Apparently the spring has lost its tension and does

not hold the ball in the notch firmly enough to retain the shifter rail in the low gear position.

If you will remove the short screw which holds this spring in the transmission cover, and replace it with a bolt about one inch long so as to exert more pressure on the spring, I believe you will be able to overcome this trouble.

TRANSMISSION STICKS IN LOW GEAR

One of our customers has a 1940 Packard 6, and he is having trouble with the transmission. Every once in a while it sticks in low gear and cannot be shifted out with the gear shift operating lever. It is necessary to raise the hood and pull the lever at the bottom of the steering column up by hand. Then the car will shift all right for a few miles, but it will stick again.

We have not attempted to correct

this trouble because we have never done Packard work. Can you tell us what is wrong, and how it can be corrected?—A Rhode Island subscriber.

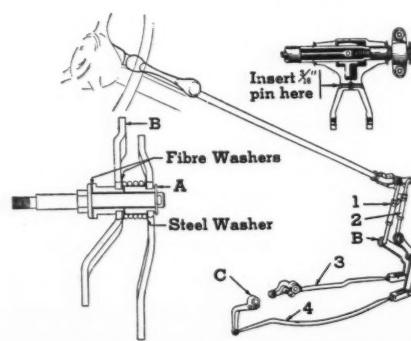
THIS trouble is caused by wear in shifting lever at the bottom of the steering column, plus the possibility that the shifter rods are improperly adjusted.

I suggest that you place the shift lever in neutral and insert a 3/16 in. pin through the aligning holes in the operating levers at the bottom of the steering column. Then disconnect the shifter rods from these levers. At the transmission, shift the gears by hand until they are in neutral position. Then check the length of the shifter rods, making whatever adjustment is necessary to permit the rods to enter the holes in the operating levers without moving the gears or the levers. This will insure proper throw of the shifter fork in relation to the movement of the shift lever.

If this does not do the trick, then you will have to replace the operating lever at the bottom of the steering column.

DISTRIBUTOR SHORTED

On a Cris-Craft Motor, Model M, Engine No. 11369, SAE 40, which is equipped with Auto-Lite ignition system, we are experiencing trouble with the distributor cap collecting moisture to the extent of stopping the motor.



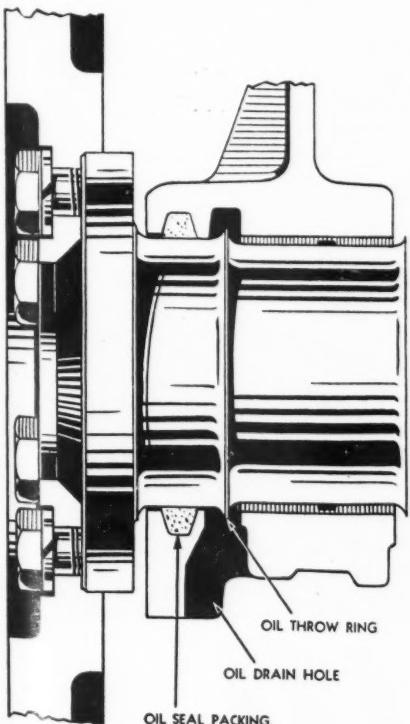
We have changed the points and condenser which corrected the trouble to some extent but not entirely. I shall appreciate it if you can give me any information that will help me with this problem.—R. M. Cook, Tuscaloosa, Ala.

RELATIVE to the difficulty you are experiencing due to moisture collecting in the distributor of your Cris-Craft engine, I suggest that you drill two small vent holes, approximately 1/16 in. in opposite sides of the distributor cap. This is done occasionally in automobile work to allow the moisture to evaporate from the distributor, and I see no reason why it should not apply to a boat engine. You might also drill one or two drain holes in the bottom of the distributor cup.

MAIN BEARING OIL LEAK

We are having trouble stopping an oil leak at the rear main bearing of a 1941 Pontiac Six. We installed new packing in the rear main bearing cap and this helped for a short time, and then the job started leaking again. —A Maine Subscriber.

YOUR trouble is that you did half the job by packing the main-bearing cap. It will be necessary to install new packing in the upper half of the bearing also in order to do a good job.



This means that you will have to remove the crankshaft to install the upper half packing. This is an asbestos rope-type packing, and has to be forced into the packing groove in the block and also in the cap, and you can't do the job without removing the shaft. Then be careful to cut the

"That isn't anything to do — I saw a man at the circus stick his head in a lion's mouth."



packing ends flush with the bearing cap seat; if it is too long, it will prevent proper tightening of the bearing cap, and, if too short, it will permit a leak.

BOOSTING MILEAGE

I have heard that the English take four pistons out of Ford V 8's to save gas. Which four would you take out? —T. W. W., Rantoul, Ill.

YOU should remove the end pistons on one bank and the two center pistons on the opposite bank of cylinders. This will result in cutting out every other cylinder in accordance with the normal firing order of 1R, 1L, 4R, 4L, 2L, 3R, 3L, 2R. You will also want to be sure to blank out the throat of your carburetor that is feeding the cylinders from which you have removed the pistons.

Personally, I would vote against the idea and instead do a super carbon-and-valve job, taking care to reface both valves and seats and then lap in the valves by hand and shove up the spark timing as far as it will go with the gas you are using, after installing new points and getting them synchronized on an ignition tester.

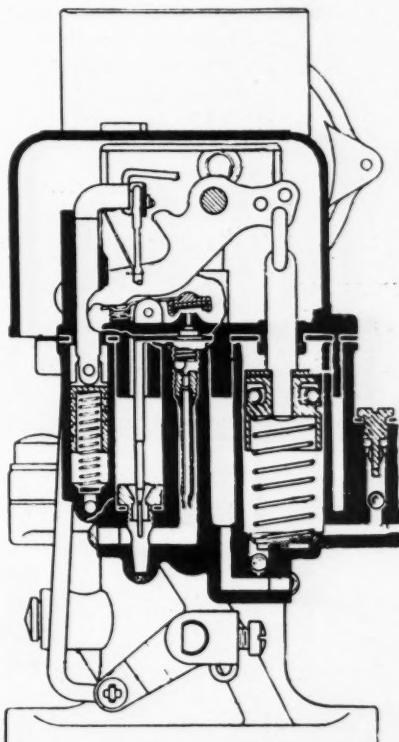
FLAT SPOT ON ACCELERATION

I would like some advice on a 1940 Oldsmobile, Model G-70, 6 Cylinder. I have recently overhauled this car and now have trouble with it. At about 45 m.p.h. it cuts out, as if starved for gas. At higher and lower speeds this rough spot seems to disappear.

I have had several cases similar to this in the past few months. So far, I have found the trouble, but this one has me stuck,

The mileage is around 70,000 miles. Could you please give me some information? — Quay's Garage, Borne, N. Y.

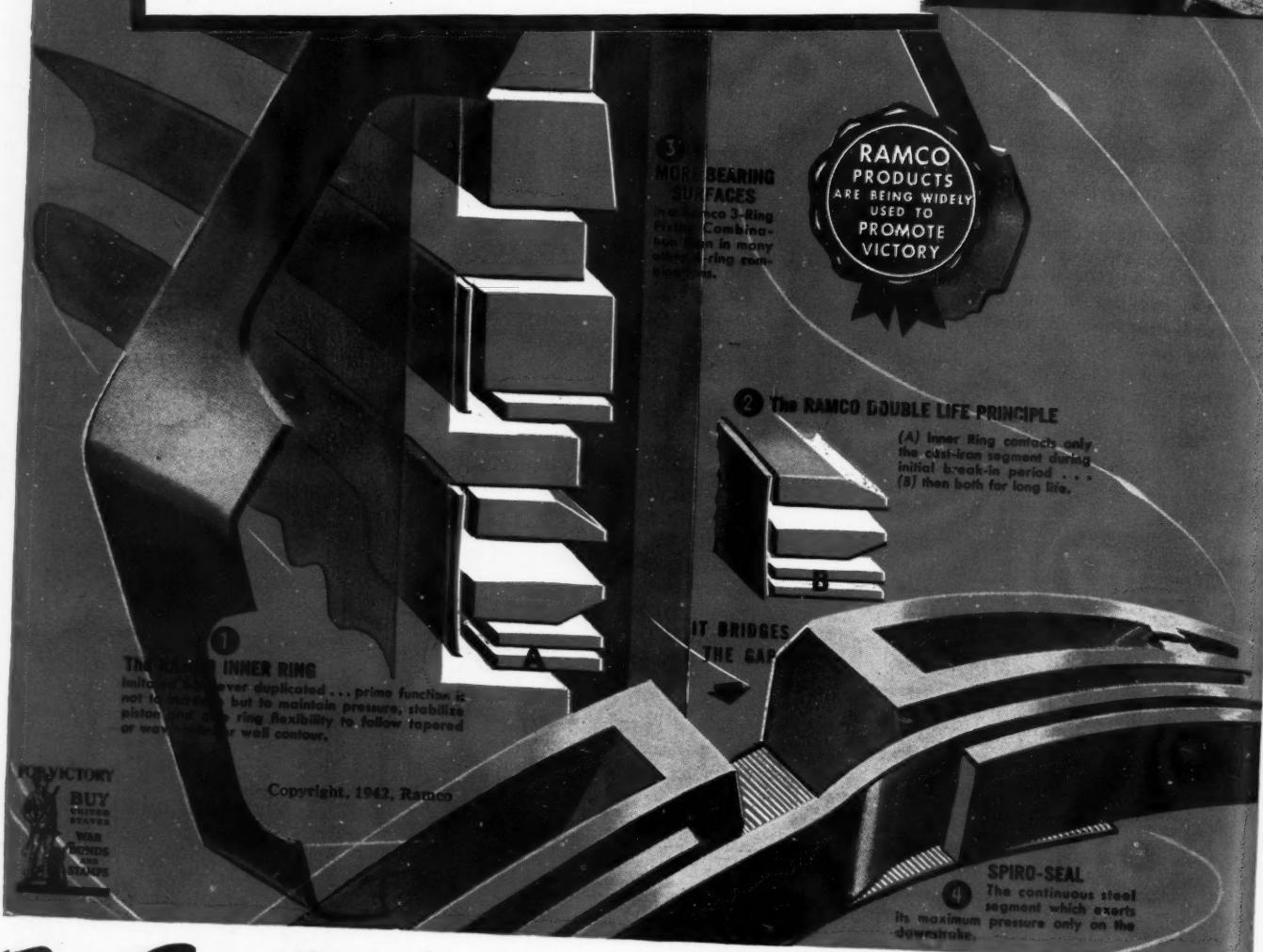
REPORTING the 1940 Oldsmobile Six which has a flat spot at about 45 m.p.h., I am inclined to believe that this trouble is caused by wear in the jets of the carburetor. My suggestion is that you get a rebuilding kit from your nearest carburetor dealer and install these new parts. They consist of the metering rod and jet, the accelerating pump and the accelerating pump valves. I believe this will correct your trouble.



I'M NOT FORGETTING THERE'S A WAR TO BE WON!

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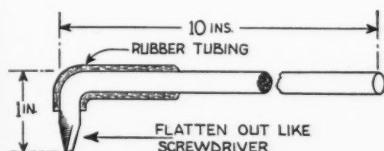
When writing to advertisers please mention Motor Age

SERVICE HINTS

FROM THE FACTORIES

Hub Cap Removal

The 1942 Chrysler cars equipped with white wheel-trim rings require a special tool for the removal of the hub cap to prevent damage to the trim ring.



A tool can be made up in the shop, using a piece of steel similar to a large size screw driver. The steel should be bent at right angles approximately 1 in. from the end, and covered with a piece of rubber tubing to prevent damage to the trim ring when the hub cap is pried off.

Oversize Plate

If the door window or ventilator regulator handle escutcheon plate turns with the handle, it soon cuts through the upholstery, making a spot which is difficult to repair.

Pontiac has an oversize escutcheon plate which can be installed as a replacement of the original. This oversize plate is large enough to cover the worn spot in the upholstery, and provides a quick means of covering up this trouble. The oversize plate is available from Pontiac dealers under part No. 4125997.

Clutch Pedal Return Spring

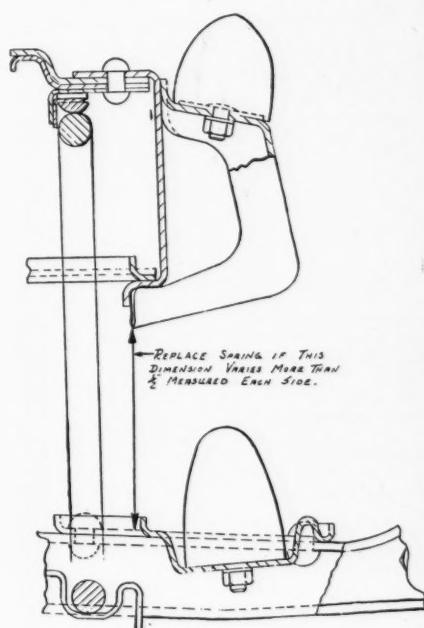
A heavier clutch pedal pull-back spring, part No. 3664881, has been released for service use on all 1941 and 1942 Chevrolet truck models. This spring is designed to correct cases where failure of the original pull-back spring has been experienced.

The forward end of the spring attaches to an extension which varies for the different models. Extension, part No. 598070, is used for the $\frac{1}{2}$, $\frac{3}{4}$ and $\frac{5}{8}$ -ton heavy-duty trucks, and is attached to the steering mast jacket clamp bolt. The $\frac{3}{4}$ -ton Special and the $1\frac{1}{2}$ -ton conventional trucks use extension part No. 3664875, which is attached to the upper real bolt of the

steering gear housing side cover. The $1\frac{1}{2}$ -ton cab-over-engine truck uses an auxiliary spring in addition to the standard pull-back spring. The auxiliary spring is the regular brake pedal pull back spring, part No. 592322, and the long hook end of this spring hooks into the clevis of the clutch-pedal pull rod at the pedal end. The lower hook end of the spring attaches to a spring extension, part No. 3665856, which in turn hooks under the sub-frame brace extending forward from the sub-frame to the top of the regular frame.

Spring Height

If it is desired to check the height of the front coil springs of the 1942 Hudson car, measurements should be taken from the lower support-arm rubber bumper to the bottom of the bracket for the upper rebound rubber, which is riveted to the frame.



Check one side against the other, and if the two measurements are not approximately the same, a shim that is .120 in. thick can be added at the top of the coil spring. If more than two shims are required to level the front end, it indicates that the spring on the short side has sagged, and should be replaced.

RE-POWER
with

R
A
M
C
O
D
10
up
IT BRIDGES THE GAP!

DETROIT LETTER

(Continued from page 35)

Now the emphasis is shifting to airplanes and tanks. Early in February the Ford Motor Co. opened a three-month course for Air Corps mechanics in conjunction with the manufacture of 2,000-hp. Pratt and Whitney aircraft engines at the Rouge. Several hundred Air Corps men from all parts of the country are learning airplane engine maintenance from Ford instructors. The students spend four hours daily on

classroom work, acquiring a knowledge of blueprint reading, shop mathematics, engine theory, and engine laboratory work. The other four hours each day are spent learning practical engine construction by working beside experienced Ford mechanics on preliminary assembly lines for the huge radial engines. The Air Corps students do not work on actual production but on assembly and disassembly operations so that they will learn to recognize worn parts and to analyze the construction of the engines.

Buick Motor Division of General Motors also has started a training

school for Air Corps enlisted personnel. A Buick service plant at Flint has been converted for the training of these aviation mechanics. The first class will be graduated in July.

Buick is building 1,200-hp. Pratt and Whitney engines for bombing planes at a new plant in Illinois. Twenty-two of these engines are used in the school to train the future aviation mechanics in the intricacies of the power plants. The students are taught tear-down and overhaul work.

Thirty-six Buick instructors, many of them former automotive mechanical specialists who have undergone an intensive training course in the Buick aircraft engine division, comprise the faculty of the school. Classes are held eight hours a day, six days a week. The first week of instruction is devoted to basic aircraft-engine design and aerodynamics. In the second week the course takes up propeller-shaft and reduction-gear assemblies, and the study of hand tools, precision instruments and drawings. Other parts of the engine are studied in succeeding weeks until the student is thoroughly familiar with the principles of the radial engine and is able to take it apart and reassemble it. Weekly examinations are held and those unable to achieve a grade of 70 or better are dropped from the course. W. F. Hufstader, Buick general sales manager, is director of the training school.

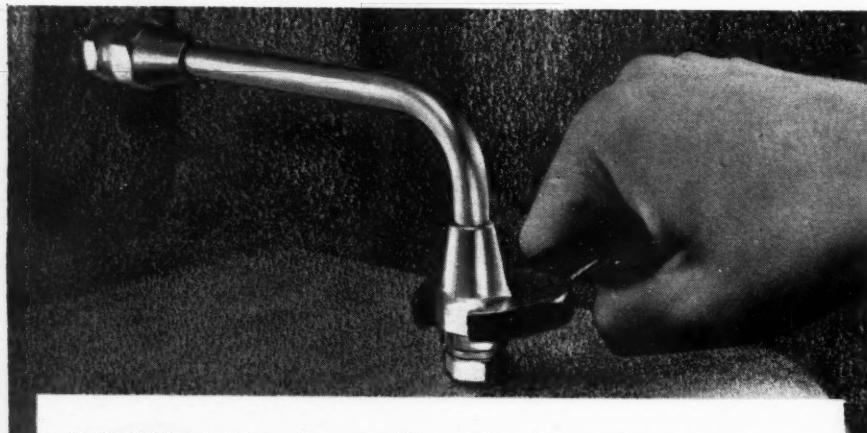
With the automotive industry now turning out guns of various calibers from 20 to 75 mm., training schools are being set up to instruct members of the armed forces in the operation and maintenance of these weapons. Oldsmobile has more than 300 Army and Navy officers and enlisted men attending its gun-service school in the Olds engineering building at Lansing. Instruction includes weapons made by other General Motors divisions as well as Olds. A staff of 24 instructors conducts two-week courses.

Pontiac Motor Division of GM also has initiated a four-week training course in the operation of anti-aircraft guns for the Navy at one of its plants. Graduates of the course will be sent to Navy training centers on the Atlantic and Pacific coasts to instruct naval and merchant marine personnel in the operation and maintenance of these automatic cannon. Later the Pontiac school will include instruction for Army personnel on the operation of 40 mm. anti-aircraft guns. Don U. Bathrick, Pontiac general sales manager, is director of Pontiac's anti-aircraft-gun school.

Tank maintenance will be a major problem for the Armored Force when the thousands of tanks to come from U. S. production lines reach the field. Chrysler, the only automotive company in volume production of tanks, recently conducted a three-week service school for officers and men from

(Continued on page 46)

Right Now it's Win The War!



MILLIONS of fittings for use with copper, brass, aluminum and steel tubing are pouring out of the Imperial plant and into the production of army and navy aircraft, naval vessels, army motorized equipment, tractors and commercial vehicles vital in defense. For behind the scenes of modern mechanized war there are literally thousands of items that play their small, but important, part in the operation of the completed machines.

As a result of this work the Imperial organization is unable to maintain the usual Jobber stock that has, in the past, enabled you to handle almost any type of emergency work without delay. You can rest assured however that we will do everything for you that any manufacturer should be doing on products that are primarily an essential part of the war effort.

THE IMPERIAL BRASS MFG. CO., 1217 W. Harrison St., Chicago, Illinois

Since conservation is now so extremely important we suggest that you salvage every possible brass fitting. Even those with rounded nuts and nicked seats should not be discarded until every possible effort has been made to produce a serviceable connection.

Routine battery testing is essential if maximum battery life is to be obtained. An ample stock of Imperial Battery Hydrometers is still available and one or more of these hydrometers will help you build up your battery service work.

Every attempt will be made by the Imperial organization to serve you, but if your Jobber is unable to deliver certain Imperial items you will know it is because right now the one thought ahead of all others is "Win the War".

IMPERIAL *Automotive Products*

CHAMPION SPARK PLUGS



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JUNE, 1942

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Keep this interest alive by regularly rendering the spark plug services—testing, cleaning, re-gapping. The cultivation of this very real interest can and will benefit all concerned, for all time to come, if carefully and intelligently nurtured now.



Champion Spark Plugs can be and will remain a top service and replacement item for every dealer who makes them so.

DETROIT LETTER

(Continued from page 44)

the Armored Force to acquaint them with a new application of automotive engines to tank propulsion. Heretofore, U. S. tanks have been powered by radial aircraft engines and airplane mechanics have been able to service them.

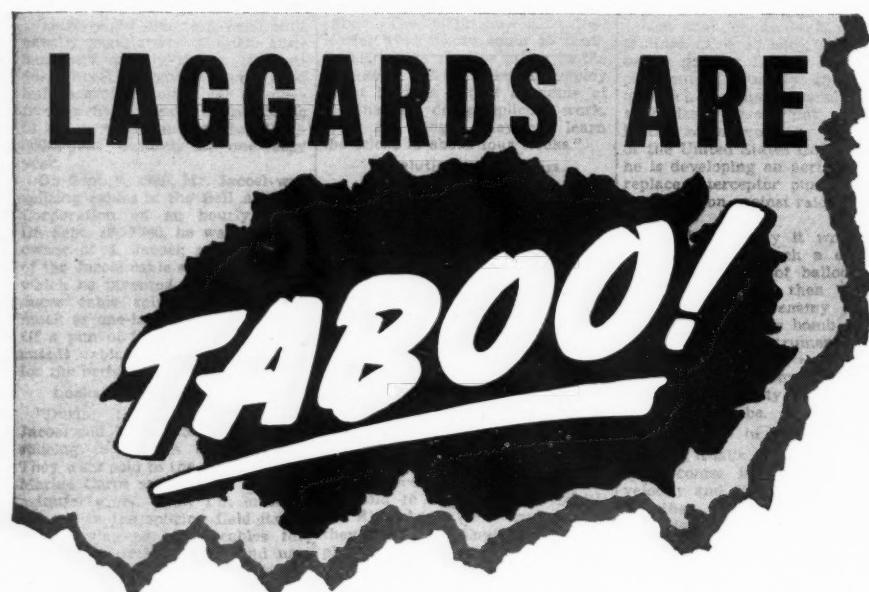
General Motors and Ford are just in the preliminary stages of tank production but they likewise will have to conduct service schools to teach tank mechanics the fine points of their

particular types of tank engines. General Motors already has a class for Diesel engine instructors at the General Motors Institute in Flint.

Packard has sponsored a training school for marine engine mechanics in cooperation with the Navy for more than 18 months. The classes, numbering 30 to 50 men each, are instructed in the maintenance and operation of the 1,350-hp. Packard engines that power the speedy members of the Navy's patrol torpedo fleet. One of the graduates of the Packard class was Ensign George Cox, who piloted a PT boat that sank a Japanese ship in Subic Bay during fight-



"Hello, Police? I wanna report the theft of a stolen car."



The cut in automobile production means that service station and garage operators must provide better maintenance and service to keep old cars rolling. Worn out, obsolete equipment that lags on the job and slows down service is taboo.

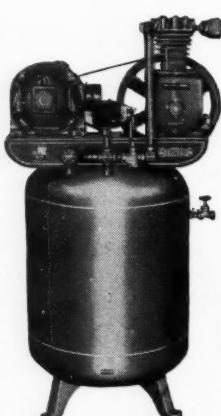
Brunner air compressors help you provide top-notch service by keeping air-operated tools working at peak efficiency. They help you speed up maintenance

work by conserving man-hours. Besides, their low current consumption helps you keep down overhead thus counterbalancing today's higher costs of business operation.

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COMPRESSORS

BRUNNER V-632—low-type vertical compressor only 61" high. Two cylinder, $1\frac{1}{2}$ h.p., fully automatic, air pressure 125-150 lbs.



ing in the Philippines. The classes generally last three weeks and may include officers as well as enlisted men. Packard also has a class for aircraft mechanics, ranging from 30 to 50 in number, who are instructed in the technical details of the liquid-cooled airplane engine which Packard produces.

Largest training activity of the automotive industry is the Ford Navy Service School at the Rouge, which now has upwards of 1,600 Navy recruits enrolled. This school, which was opened in January, 1941, trains sailors to become skilled mechanics, electricians, shipfitters, carpenters and metalsmiths to man the ships of Uncle Sam's growing fleet. Their training ground is the huge Ford Rouge plant, largest industrial establishment in the world. The students spend eight hours a week in classes and 32 hours in actual shop work. Henry Ford himself financed the eight barracks, mess hall and other facilities where the sailors are housed during the 90-day course. The Ford Motor Co. furnishes the instructors.

Packard Marine Unit Is Awarded Navy E

Engine power that makes possible the stirring "raid-and-run" exploits of the famous United States PT boats got special recognition when the Navy "E" was presented May 5 to the Marine Engine division of the Packard Motor Car Co.

Packard received the award for production excellence and achievement in fulfilling Navy contracts. Presentation of the coveted "E" flag was made by Rear-Admiral W. T. Cluverius, U.S.N. (ret.). Said to be the last surviving officer of the battleship "Maine," blown up in Havana Harbor in 1898, the admiral is now president of Worcester Polytechnic Institute, Worcester, Mass.

The flag was accepted for the company by Alvan Macauley, chairman of the Packard board.

On Guard!

against **NOISE**

Noise causes driver fatigue.

against **WASTE**

Sound construction gives longer life — saves steel and labor.

against **BACK-PRESSURE**

Acoustic engineering avoids back-pressure that wastes gas, cuts power, and shortens valve-life.

against **CARBON-MONOXIDE**

Leaking mufflers and joints can be dangerous to life.

● Built to take and whip everything that comes their way, Buffalo Mufflers give the first line performance and enduring service that your customers want more than ever . . . Buffalo Mufflers are everything you'd expect from the company that holds more design and construction patents than any other automobile muffler manufacturer . . . Quickly available from NAPA Warehouses and associate jobbers, wherever you are.

BUFFALO PRESSED STEEL COMPANY, INC • YOUNGSTOWN, OHIO

Also manufacturers of Buffalo Oil Filters and Kralin-Impregnated Replacement Elements for all popular Filters



Buffalo
MUFFLERS
Stop that Noise!

DEALER AND WAR

(Continued from Page 27)

delicate instruments carried in the army trucks.

A bench lathe, formerly used for turning down generator and starting-motor armatures, is now busy turning out parts for a "twenty-five pounder" gun.

It is not possible to give the exact number of parts this automobile dealer is turning out for the army, but it can be stated that there are thou-

sands of each of several types of parts. The real significance of the contribution being made on behalf of the war effort may be estimated from the fact that all the work done at first was of local origin; now much of it comes from firms not located in Windsor. These firms are shipping in their material to Webster Brothers-Labadie "in the white" to have it cleaned and painted and then delivered to the automobile manufacturing plants as finished material.

The volume of work has increased to such an extent that it will soon be necessary to install conveyor systems.

A garage track has been used for this purpose.

Details regarding the actual parts being processed come under the head of military secrets but it can be said that besides the gun part they include parts for Bren gun carriers, and a number of tools and other equipment used by soldiers on the battle field.

The feature of the work that will interest every dealer on the continent may be that Webster Brothers-Labadie, Ltd., has solved very neatly its own peculiar economic problem and is using much the same equipment as it has always used in normal business.

While the firm is very well satisfied with the volume of business to date, there is every indication that volume will increase. It is pouring in to such an extent that it may be necessary to expand into another building near-by.

"We just went out and dug it up," Fred Webster commented. "And, since every large garage in the country has practically the same equipment as we have, they should find something to do that can further the war effort and help retain their organization."

Indirectly the firm is going after another war job. It is specializing on the repair of industrial engines. Many engines are used to run air compressors, arc welders, pumping systems, small warehouse trucks, and so on.

"What we want to do most of all," said Webster, "is to keep our capital and our personnel intact. After this war has been won, people will be buying new cars and tires again."

Car, Tire Seizure Peril Remote, Says Reynolds

There is no immediate prospect for federal confiscation of cars or tires, Senator Robert R. Reynolds, of North Carolina, chairman of the Senate Military Affairs Committee, declared May 7 in a telegram to Thomas P. Henry, president of the American Automobile Association.

Responding to a protest from the A.A.A. concerning the confiscation feature of proposed federal speed legislation, Senator Reynolds declared that he was personally opposed to any taking of private property by the government if needs could be met otherwise, and said he would call on federal agencies to "coordinate their public announcements."

The Military Affairs Committee now has under consideration a bill, introduced by Senator Reynolds, as Chairman, calling for a 40-mile federal speed limit with confiscation of the vehicle as penalty for violation, and another measure, introduced by Senator Downey, of California, giving the federal government power to requisition privately owned vehicles under certain circumstances.

HALLOWELL

A Productive Investment Now . . . and After



Fig. 928

Pat'd. and Pat's. Pending

Drawer
is extra

There's nothing slip-shod or temporary about "HALLOWELL" Shop Equipment. No Siree—they're built to take the rigors of war-time production day-in and day-out—and then still be good for years thereafter. They're never a "white elephant" on anyone's hands.

"HALLOWELL" Benches are truly extra sturdy, with the famous flanged and ribbed leg construction with integral flaring feet, and they're available in 5 heights, a variety of top surfaces, drawer and compartment arrangements. In fact, there are 1367 "HALLOWELL" Bench combinations available.

P.S. And, "HALLOWELL" Benches do not require costly bolting to the floor to maintain steadiness.

"Send for Shop Equipment bulletin."

STANDARD PRESSED STEEL CO.

JENKINTOWN, PENNA. BOX 561

—BRANCHES—

BOSTON • DETROIT • INDIANAPOLIS • CHICAGO • ST. LOUIS • SAN FRANCISCO

TRANSMISSION

(Continued from page 33)

"I'll try to remember," said Chuck. "O. K. Now let's get it apart. When you start drivin' out the main shaft, be sure you use a soft drift. We don't wanna scar up any more than we have to." Pop was studying the main-shaft gear. "Oh-oh," he said. "That main-shaft gear is pretty well chewed up. We'll have to replace it. Better press off the bearing."

He went back to his generator job. The next time he looked around, Chuck had the main shaft in a vise, with the outer race of the ball bearing resting on the jaws, and was just starting to pound the end with a hammer.

"Whoa!" shouted Pop, hurrying over to the bench. "Where the devil did you ever learn to drive off a bearing that way?"

"I never seen it done no other way."

"Did you know you could ruin a bearing hammerin' it like that? You can. It's only restin' on the outer race. When you pound the end of the shaft, you're tryin' to drive the balls and inner race right outa the outer race. You might not only ruin the races, you might crack some of the balls."

Chuck looked apologetic.

"Bring it over here to the arbor press," said Pop. When Chuck had obeyed, Pop set the shaft up in the press. "The idea," he said, "is to support both races firmly and then force off the bearing with pressure—like this." He pulled the lever on the hydraulic press and the bearing slid off the shaft slowly and smoothly. "Now," said Pop, "you've got a bearing you can still use. We can't afford to ruin no parts these days."

"I guess there ain't nothin' we can waste."

"Not that I've heard of lately," said Pop. "Now you better get on with disassemblin' that transmission, I'll call up Sol and tell him to rush around a mainshaft gear and a spline shaft. Keep your eyes peeled for anything else as you go along—pitted teeth and so on. We gotta give Al a fast job and a good one."

"Yes, sir," said Chuck.

"When you get it assembled again, be sure you shift the gears to see that the gears mesh all right. Sometimes after an overhaul they don't mesh all the way and you're invitin' trouble. They'd be chewed up before we got paid for the job, and Al's prompt pay. And don't forget to check the pawls and springs that lock the shifting-fork rods in position are O. K."

"I hope I catch on a lot faster than I've been doin'," said Chuck, "so I won't take up so much of your time."

"You're doin' all right, kid. I

wouldn't be puttin' you on a job like this alone if I didn't think you were. But this repair business ain't a guessin' game; you gotta know exactly what you're doin'. I just tried to help you a little with this one transmission. There's plenty of other kinds. Every one of 'em has its own little quirks. The only way you're gonna get to be an all-round, valuable mechanic is to bone up on all of 'em. Take home the factory manuals—I got all you want right in the office. Read the trade papers. Learn everything you can get hold of. In times like these, we not only got to do the work right; we've got to do it fast.

The more you know, the faster you can do it."

"Thanks, Mr. O'Neill."

"The only one that calls me mister is the wife when she's got me in the doghouse. Now see how fast you can get that transmission finished."

"O. K., Pop."

C. N. Barney Elected

The board of directors of Worthington Pump and Machinery Corp., has elected Charles Neal Barney, of Scarsdale, N. Y., a vice-president of the corporation. A member of the Worthington organization from 1918, he has been treasurer since 1931.

For 32 years, McQuay-Norris has been manufacturing precision parts for motors used in passenger cars, trucks and tractors. In addition to making automotive replacement parts, we are now direct contractors to the Army and Navy and subcontractors on critical precision parts for aircraft, tanks, scout cars and trucks.

McQUAY-NORRIS MANUFACTURING CO.
Let's keep cars, trucks and tractors rolling!

"YOU BET THEY SAVE ME TIME AND TROUBLE!"



LEGALLY SPEAKING

A lawyer's interpretation of Federal and local court decisions of interest to repairmen, presented each month

By C. R. ROSENBERG, JR.

What Does It Mean?

When a dispute arises as to the exact meaning of a word or clause in a contract, the courts are called upon to "interpret" the uncertain words by definitely fixing their legal meaning and effect. In such cases, one of the important guides to interpretation is the effect that the parties to the contract have themselves given to the disputed words by their actions.

"The construction placed upon it by the parties," said the Supreme Judicial Court of Massachusetts recently, "is entitled to weight in determining the proper interpretation of the instrument."

But there's a hidden snag in that principle. Suppose a repairman, to please a troublesome customer, makes replacements and gives service far beyond what their contract intended. If the contract gets before a court for "interpretation," there's a likelihood that his furnishing such "extras" may be construed as an acknowledgement on his part that he was obligated to do it under the terms of the contract. The argument would be that he would not have done it unless he knew he was obligated to. His good-will actions might even be read into the contract as recognition of an obligation to keep on rendering service indefinitely.

Moral: When a repairman does anything for a customer which he is not legally obligated to do under their

agreement, he should make clear that he is doing it solely as a matter of good will and not as a legal obligation. (*Coleman vs. Commonwealth*, 29 Northeastern Reporter, second series, 832).

Oil on Floor

Even so small a thing as a spot of oil on the floor may cause a repairman a substantial loss. It happened that way in a recent Arkansas case.

An employee slipped on a spot of oil on the floor of a storage room of the business house for which he worked. He sued the business house for his resulting injuries. The suit was based on the legal principle that the employer is bound to exercise reasonable care to furnish a safe place for the employee to work. Explaining how the employer was liable for even such a "hazard" as the spot of oil on the floor, the Arkansas court said:

"If another employee than the one hurt spilled the oil on the floor or left the bottle of oil in a place and position where the oil could leak out on the floor, it was the employer's negligence. The other employee's negligence was the employer's negligence. If the oil remained on the floor a sufficient length of time for the employer to have discovered and removed same, it was actionable negligence for the employer not to have

McQUAY-NORRIS

ALTIMIZED

Engineered Set

PISTON RINGS

*They're your best buy
because McQuay-Norris*

First In the industry with a year record of engineering achievement, service to the repairman

First In performance because Engineered Set Piston Rings are engineered fact as well as name

First In Engineering Service...blueprint instruction and practical guides to progressive repair

McQUAY-NORRIS



done so, if it resulted in injury to one who had not assumed the risk or was himself not guilty of contributory negligence."

The court sustained a substantial verdict against the employer and in favor of the injured employee. (*Safeway vs. Phelps*, 145 *Southwestern Reporter*, second series, 337).

Salesman Can't Change Contract

"Ordinarily," says the Supreme Court of Mississippi in a recent case, "a selling agent is supposed to be employed to contract a sale, and has no implied power, once this is done, to undo or modify the contract." Of course he could make changes if he had special authority to do so, but not otherwise. (*New Home vs. Moody*, 198 *Southern Reporter*, 550).

"Outside" Promises Don't Count

Where delivery of parts or equipment or other performance under a contract within a given time is important to the repairman who is paying the bill, the time limit should be incorporated as one of the terms of the contract. "Outside" promises as to time, which are not included in the contract itself, don't count, according to a recent pronouncement of a federal court.

In the federal case, a contractor sued for money alleged to be due under a contract. It was urged by the defendant that the contractor had not substantially completed the work within a specified time. No such limit, however, was set forth in the contract.

To this the federal court said:

"The defendant points out that the plaintiff contractor made an oral promise as to a commencement and

progress of the work under contract. It appears, however, that any promise in this respect was made prior to the execution of the written contract, and by failure to incorporate it in the written contract, we are of the opinion that such promise is of no effect." (*United States vs. Biggs*, 116 *Federal Reporter*, second series, 768).

"Utterly Worthless"

When goods bought turn out to be utterly worthless, the buyer when sued for the purchase price may set up the claim of "total failure of consideration," meaning that he got nothing for the money. If the goods are worthless in part, he may plead "partial failure of consideration."

A buyer of certain machinery was sued in Texas for the purchase price. He contended that the machinery was utterly worthless for the purpose for which it was sold and that therefore there had been a total failure of consideration. He admitted, however, he had used the machinery.

"If machinery is sold for a particular purpose," said the Texas court, "and it will not perform any of its functions, the buyer may set up total failure of consideration as defense to the seller's suit for the purchase price of the machinery; but if it only performs those functions badly, the remedy is to recover for a partial failure of consideration, showing clearly the extent of same. If the buyer makes any use of the machinery or goods, he may not contend that there is a total failure of consideration."

Meaning, of course, that the machinery was not utterly worthless if the buyer got some use out of it! (*Allison vs. Angelo*, 145 *Southwestern Reporter*, second series, 645.)

JUNE, 1942

51

TART Stopping Waste NOW!

It is no time for waste. Follow the lead of smart repairmen everywhere and save time, parts and labor by using McQuay-Norris Engineered Sets! They get the job done right the first time because with McQuay-Norris engineering is a vital principle not just a catch phrase. Remember, there's a Set of these famous rings specifically engineered for every job that comes into your shop! Start stopping waste now and watch your volume and profits grow!



M. QUAY-NORRIS MANUFACTURING CO.
Diston Ring Headquarters

CATALOGS
MANUALS



BOOKS AND
MERCHANDISING AIDS

A wall chart on the complete Toledo line of independent front-wheel suspension parts is announced by The Toledo Steel Products Co., 2001 Second National Bank Bldg., Toledo, Ohio. Seven detailed cut-away drawings of front wheel suspension assemblies, keyed to a corresponding parts listing make this chart a handy reference guide.

* * *

The Chek-Chart Corp., 624 S. Michigan Ave., Chicago, Ill., has published a new Truck Lubrication Guide designed for use by oil companies and their representatives serving the truck

market. It is a complete guide for the proper selection of lubricants for each truck, as well as a guide for the application of lubricants and the performance of other services.

* * *

"Machine Maintenance with Metallizing," 16-page Bulletin 42A, just published by Metallizing Engineering Co., Inc., Long Island City, N. Y., describes the metallizing process and equipment for its application. Tells briefly how essential industries are eliminating replacements, and increasing service-life of equipment now difficult to replace, by building up worn diameters with any desired wear, and corrosion-resistant sprayed metal. Also indicates how metallizing is used to rapidly salvage mismatched parts and defective castings in production. Examples given to show how metallized "inserts" and coatings are helping manufacturers conserve vital metals.

* * *

Gatke Corp., 228 N. LaSalle St., Chicago, Ill., has a new catalog covering brake blocks and liners for trucks, tractors, trailers and other heavy duty equipment. Free upon request.

* * *

Modern Welding Practice, by A. D. Althouse and C. H. Turnquist, is an authoritative text book for students and beginners and a handy reference book for experienced welders and mechanics. Published by The Goodheart-Wilcox Co., Inc., 2009 S. Michigan Ave., Chicago, Ill. List price, \$4.00.

* * *

The U. S. Asbestos Division of Raybestos-Manhattan, Inc., Manheim, Pa., makers of "Grey-Rock" brake lining, has made available for free distribution to car owners a folder titled, "How To Increase the Life of Your Car By Saving Your Brakes." This folder contains 10 easy rules for car operation which result in less brake lining wear, and consequently less tire wear.

* * *

The Fourth Edition of "Raybestos Brake Service Guide" has been released by the Raybestos Division of Raybestos - Manhattan, Inc., 75 E. Main St., Stratford, Conn. Included in the new edition are such features as detailed diagrams and adjustment and maintenance information for all passenger car, truck and bus brake and braking systems; handy troubleshooting chart; basic fundamentals of brake service; quick reference index, etc. Price 25 cents, or free to Raybestos dealers through their distributors.

* * *

The Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc., Passaic, N. J., has available wall charts covering proper care of rubber hose used for fire, water, steam and other types.



PERFECT CONTROL

RELINE WITH GRAFIELD
...and get that
CERTAIN feeling!

BRAKE GRAFIELD LININGS

WORLD BESTOS CORP., Paterson, New Jersey

- ROLLS
- SETS
- SLABS
- BLOCKS
-
- CLUTCH
- FACINGS

Facts and Flashes

Published by the
Technical Service Department
ETHYL CORPORATION

FROM THE WARTIME AUTOMOTIVE FRONT

1600 West Eight Mile Road
DETROIT, Michigan

Octane ratings of civilian fuels are still holding up well even though high-octane components are being used for military gasoline. While some reductions of antiknock value of civilian gasoline have occurred, they have not justified pessimistic opinions prevalent a month ago.

Owners who boast that their cars "never knock" are advertising the fact that they may not be getting full gasoline mileage. Ignition timing should be set so car will knock slightly on a heavy pull. Over-retarding spark causes loss of power, wastes gasoline.

One effect of gasoline rationing may be increased demand for battery recharging. Elimination of long trips and use of car exclusively for short-haul necessity driving puts an extra drain on battery. Service men are advised to watch batteries very carefully this summer.

Carrying spare cans of gasoline in trunk compartment is a dangerous practice—often outlawed by fire ordinances. Reason is that otherwise not-too-serious rear-end collision may cause disastrous fire. Also fumes of gasoline in trunk compartment can be exploded by chance spark. Advise against this practice at every opportunity.

Supply of antiknock fluid for U. S. military gasoline is ample. New Ethyl plant completed a year before Jap attack on Hawaii boosted Ethyl capacity sufficiently to meet all war needs and still have antiknock fluid for civilian use.

CAUTION: Car dealers who "short-cut" storage precautions for new cars are risking serious damage. Follow bulletins issued by your factory—protect rubber, paint, engine parts, battery, etc. Be sure to drain gasoline completely from tank and fuel system to avoid future trouble from gum deposits.

"Oil is ammunition—use it wisely!"

SHOP KINKS



Here's your chance to pick up a little cigaret money. We'll pay three bucks (\$3.00) for every Shop Kink accepted and printed. So send 'em in to us—some short cut you use in doing a job easier and quicker than the other fellow—some special tool you made when you couldn't buy one to do the job—and we'll do the rest. Incidentally we won't accept any that have previously appeared in any other automotive publication. Here are some that were accepted this month:

STARTER TROUBLE

If you have trouble with getting a 1941 or 1942 Chevrolet engine started, the chances are that it is because of a defective polarity switch on the starter. I have found that, when this polarity switch does not operate, the easiest way to correct it is to cut it out of the circuit entirely unless you have a new switch to install.

Just disconnect the coil wire at the polarity switch and connect it directly to the distributor breaker point post. Disconnect the wire from that post to the polarity switch and disconnect it from the switch, removing it entirely. Then disconnect the other wire from the ground post of the distributor to the polarity switch at the switch, and connect that wire to a ground, either on the starter or on the valve cover plate. This will remove the polarity switch from the circuit, and the car will operate just like any other car that never had a polarity switch. Dot-

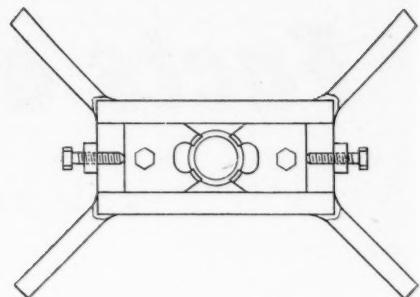
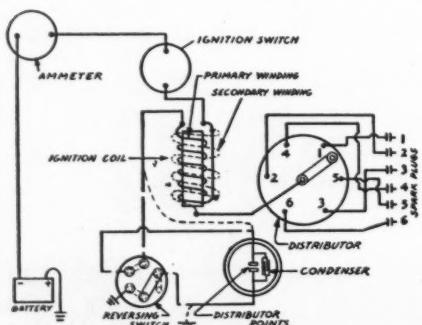
ted lines in the illustration show how to cut this switch out of the circuit.—Norris M. Whitaker, Motor Pool, Fort Mason, San Francisco, Cal.

REPAIRS DAMAGED AXLE HOUSING

The ends of truck rear axle housings are often damaged by broken axle shafts so that the bearing retaining nut has to be cut off. This is because the end of the housing spreads when the shaft breaks, or because the wheel hub damages the threads. When this happens it usually means that the housing has to be replaced.

I made a threading tool with which I can recut the threads on the housing, starting from the wheel bearing and working outward toward the end of the housing. This not only recuts the threads, but cuts them deeper so that there is a tendency to compensate for the slight spread of the housing, making it suitable for further service.

The tool is made from two old dies, enclosed in a frame of cast iron. I heated the dies to soften them, cut the proper thread in them, and then hardened them. The frame has a groove cut in it to permit the dies to slide. The ends of the frame were drilled and tapped so that a set screw and lock nut could be used to back up the dies after adjusting to the proper size. I spread the dies, slip the tool over the housing, and



adjust the dies with the set screws. Then I turn the tool, using the short pieces of pipe which are welded to each corner as handles, and chase the threads out toward the end of the housing. It does a swell job.—O. K. Merritt, Merritt Machine Shop, Mount Airy, N. C.

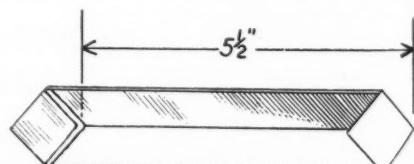
DISTRIBUTOR TROUBLE

Failure of the engine of a 1942 Ford 6 or 8 to start may be due to a loose connection of the low tension wire in the distributor.

Remove the contact post bracket from the distributor, and you will find that the contact spring has pushed the post and its corrugated insulator up through the bracket so that the spring does not make contact with the contact point arm plate. By squeezing these corrugations together, you can make a tighter fit in the bracket so that the contact spring and post will stay in their proper positions.—Norris M. Whitaker, Motor Pool, Fort Mason, San Francisco, Cal.

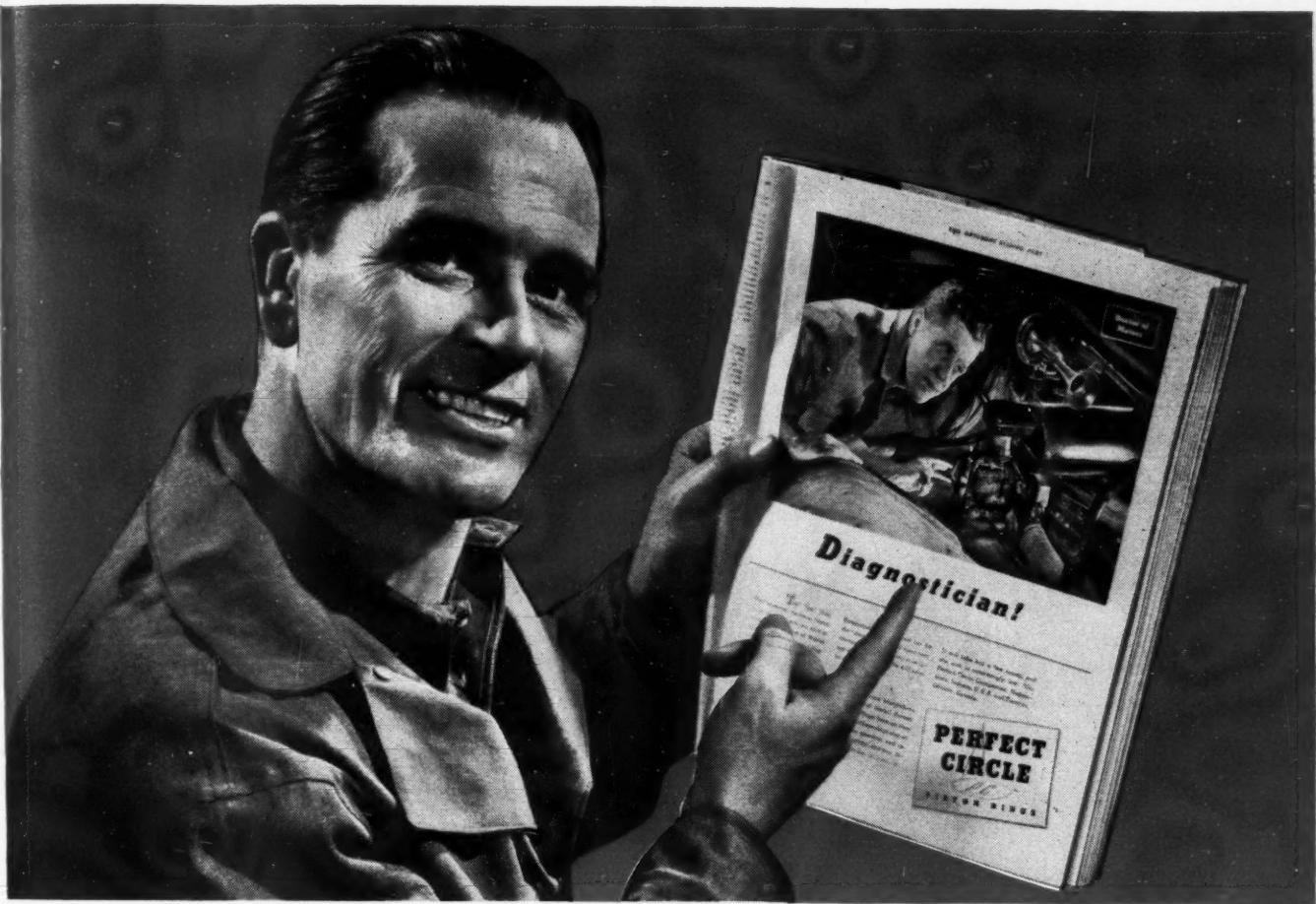
SPRING REMOVER

It is very difficult to remove the coil spring used on the hood and the rear-deck lid as a balance spring, because of the strong tension of the spring. I have made a tool for removing and replacing these springs.



I cut a piece of 1 in. angle iron, 5 1/2 in. long, and welded a 1 in. square of heavy sheet metal on each end.

To use, raise the hood or deck lid to its open position and place the spring remover against the spring so that the end pieces enter through the coils. Then lower the hood, and the tool will hold the center coils of the spring extended so that the ends will be free to permit unhooking them from the retainers, so the spring can be removed. When reinstalling, hook the ends of the spring in place, open the hood or deck lid to its fully opened position to relieve the tension on the spring removing tool, remove the tool and the spring is back in place.—F. A. Ulmer, 5609 Warrington Ave., Philadelphia, Pa.



"That's What I Call a Break!"

"I'm a mechanic and I want to say something—right now—that I've been itching to get off my chest for a long, long time.

"It's about those Perfect Circle ads

appearing in leading national magazines. They're swell! Take the last one, for example. You know—the one that ran in the May 23 issue of *The Saturday Evening Post*. You'll see it in *Life*, *Collier's*, and *The Country Gentleman*, too. It gets down to bedrock with a sound argument that motorists can't miss. It directs business to our shops. It sells car owners on our ability. That's what I call a break—for all of us!"

PERFECT CIRCLE JOBBERS

Are

"PISTON RING HEADQUARTERS"

THE PERFECT CIRCLE COMPANIES, Hagerstown, Indiana, U. S. A. and Toronto, Ontario, Canada

Cooling System Service
Selling is Made Easier

Even with the rationing of gasoline, people are taking care of their cars. Hirl's (Hoyle to you) Service Station, 43 Lake Street, White Plains, N. Y., over one week-end did \$35 worth of business by selling complete cooling system service, and every week the total runs into real money.

Hirl took advantage of the institutional advertising of the oil companies and car manufacturers who, by radio and other forms of advertising, have been stressing the importance of this necessary protective service. Hirl in-

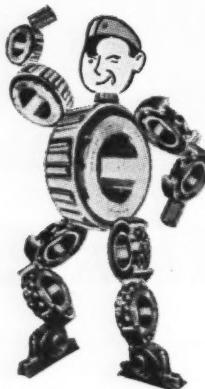
structed his attendants to call this service to the attention of his customers, many of whom needed only to be reminded of this necessity.

This wide-aware dealer further took advantage of the window stickers and other merchandising helps provided by manufacturers. As a further incentive to his attendants, said Hirl, extra compensation is granted to them for each cooling system service job they perform.

Periodic drives are conducted on various types of service and during this season of the year he concentrates on cooling system protection for summer driving.



YOU CAN HELP SAVE THIS "CRITICAL" STEEL



Chromium steel (#52100), used in the manufacture of ball bearings, is on the "critical" list. The demand for ball bearings for our mechanized units, airplanes, tanks, supply trucks, gun mounts, etc., now far exceeds manufacturing facilities.

Therefore, take good care of ball bearings! Wash them carefully. Lubricate them properly. And when they are too badly worn don't throw them away. They can be reconditioned the Ahlberg way and give years of extra service. That's the way you can help "SAVE STEEL."

Ask your jobber about Ahlberg's Bearing Service Equipment which cleans and repacks bearings. He can also give you details and facts about Ahlberg Ground Bearings for replacements.

AHLBERG
BEARING COMPANY
Manufacturers of CJB Master Ball Bearings
★ 3028 WEST 47th STREET • CHICAGO, ILL. ★
Oval West is PRECISION BEARINGS, INC. Los Angeles

Tire Saving Meetings Are Planned by Bowes

What servicemen must do to save rubber and keep their customers motoring will be the main subject of a series of group meetings to be held throughout the country by the Bowes "Seal Fast" Corp. of Indianapolis.

According to Louis P. Fisher, general sales manager of the Bowes organization, these meetings are designed to bring home to servicemen everywhere the importance of alert and skillful tire maintenance as a means of rubber conservation.

The meetings will be conducted by Bowes factory representatives with the cooperation of local distributors in each section. A tire-rationing board official will take part in each program.

These meetings will be open to all servicemen interested in tire conservation and will be strictly "non-commercial," it is promised. Another phase of the Bowes campaign will be a series of "Tire Repair Clinics" which Bowes distributors will conduct in their own districts. Information about time and place of these meetings can be secured from local Bowes distributors.

Opens Washington Office

The Chek-Chart Corp., Chicago, publishers of automotive lubrication and service information, has established an office at 2480 16th St., N.W., Washington, D.C.

The office will be capital headquarters for Raymond Shaw, Chek-Chart president, E. W. Allington, Eastern sales representative, field engineers and other Chek-Chart personnel in connection with the development of lubrication charts, manuals and bulletins for the various branches of the United States, British and Canadian armies.

MEMO

FROM "THE CHIEF"
TO THE SERVICE MANAGER

Jack -

This Wolf's Head ad
in the June 20th Saturday
Evening Post looks like it
will really sell premium
oil these days - Let's get
the Wolf's Head distributor
to stop in.

C.W.

For Cars
"Worth their Weight
in gold"



35¢ per quart is a small
price for certain protection

Most car-owners today are willing to give anything to lengthen
the life of their automobiles.

Your safest protection against engine wear-and-tear costs—
only 35c a quart. It is Wolf's Head Oil—specially refined from
top-quality Pennsylvania crude, the world's finest.

Wolf's Head is so good it is used by automotive engineers and
designers everywhere. So good it has been used by Pan American
Clippers for over 900 million passenger-miles, in more than 13
years of flying experience. So good it will give your car an extra
lease on life for wartime use!

Wolf's Head Oil Refining Co., Oil City, Pa., New York, N. Y.

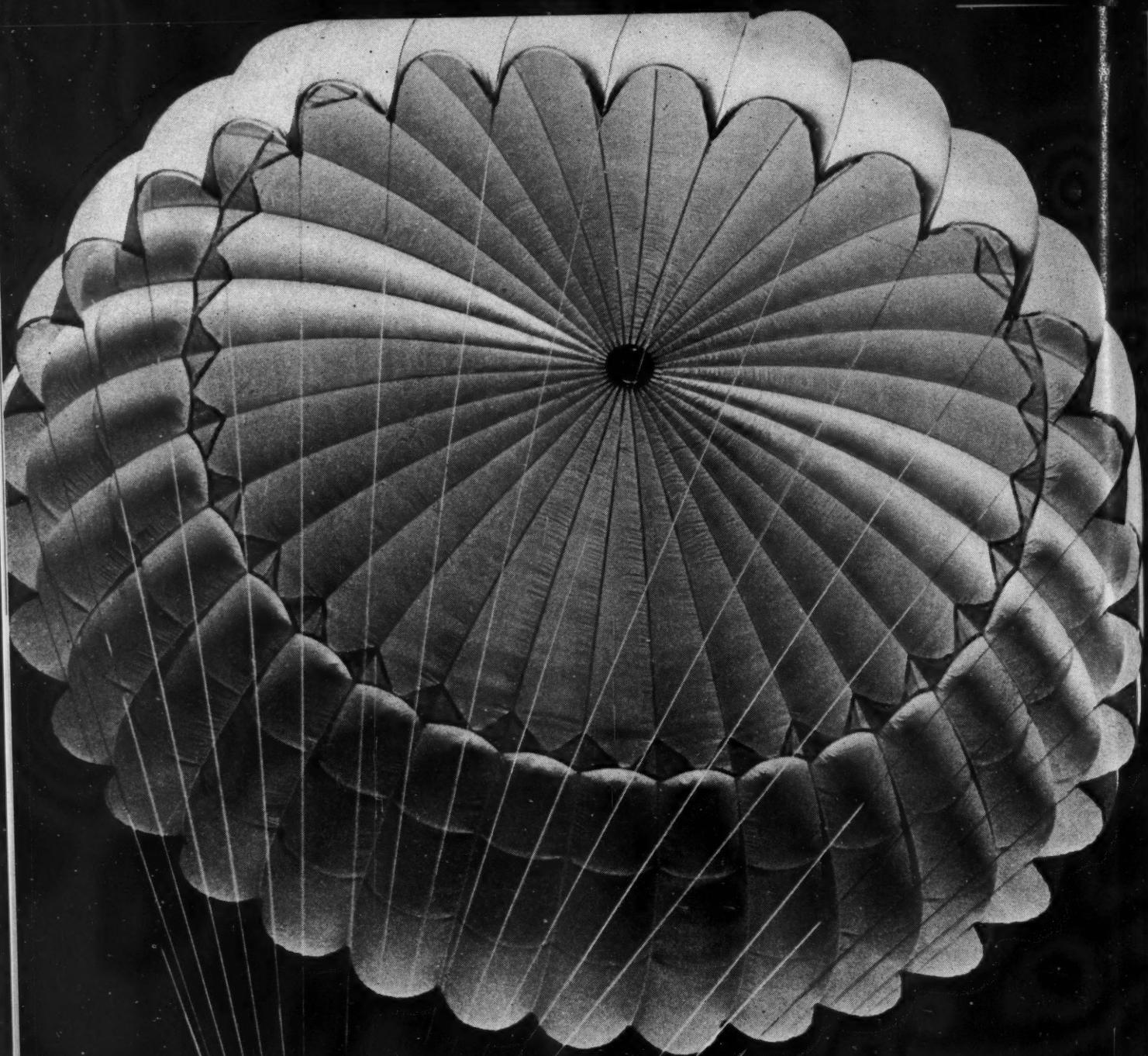
To keep it rolling LONGER, use

WOLF'S HEAD
MOTOR OIL AND LUBES



P.G.C.O.A. Permit No. 19 • 100% Pennsylvania

35¢
a quart



SAFETY FROM START TO FINISH WITH

Pearlcraft

WHO'S RIGHT ABOUT GAS?

(Continued from Page 15)

Jump confidently into reconditioning any make of engine with the correct Pedrick Engineered Set of piston rings.

There is safety in these carefully teamed selections of specifically engineered rings because they have both the flexibility which gives absolute oil control and the compression-seal which prevents blow-by. Each set assures immediate and lasting efficiency even in tapered or out-of-round cylinders.

Every job is a "happy landing" for both you and your customers because the huge line of Pedrick Engineered Sets means one especially designed for almost every type of engine you service—car, truck, bus, or tractor.

Supporting you is an extremely liberal *labor-and-ring* guarantee against oil pumping which absolutely assures your profit and takes away any risk whatever.

tank cars and the railroads have done a wonderful job in hauling oil.

Beginning 12 months ago, we have heard and read a continuous and seemingly never ending series of violently conflicting statements, announcements and near-announcements from various sources in Washington regarding the need for rationing gasoline because of a gasoline shortage, for rationing gasoline because of a rubber shortage and regarding the lack of need for any rationing of gas at all. We have been threatened with or warned against, the requisitioning of privately owned cars while 450,000 1942 models and uncounted other cars are standing around, slowly deteriorating, in dealers' establishments and in used-car lots, and still other cars are being exported. We have been told one day of the possibility and another day of the improbability of the Government's buying our tires or seizing them. We have heard that gasoline must be rationed in the East to conserve rubber, while in the rest of the country there is no rationing as yet. Lately we have heard that such rationing must be extended from one end of the land to the other, to save tires throughout the country and to save both gasoline and tires in the East. And we have heard that there is nothing in the situation, particularly with respect to rubber, about which to get excited. Excitement, or more accurately, confusion, nevertheless rather generally prevails and there is an apparently widespread epidemic of belated hysteria among second-stringers in Washington.

Let's look at the record—at just the last part of the record—so far as it has been written during the past month. Presented here is a chronology

made up of newspaper reports of what was said by this or that governmental representative, of what was asserted and what was denied, of what was done and what was not done. In that record, it may be contended, lies the basic reason for the "gimmies" and the "chiseling" which astonished and shocked the authorities when ration cards were distributed to automobile owners in the East—including members of Congress. Gasoline rationing, consistently advanced and intelligently sold as a necessary war measure, with the real reasons for it frankly, fully and simply explained, would have gone over with a cheerful bang. Americans—99 44/100 per cent of them—are at least patriotic. And this includes with the rest of our citizenry those who own and need their automobiles.

April 22—Gasoline rationing announced, to become effective in 17 Eastern States and D. C. on May 15 and continuing as currently planned to July 1, when revisions may go into effect. This step was necessary, according to OPA, to meet the immediate emergency in transportation caused by submarine sinkings of tankers. The basic ration, said an OPA spokesman, would be 2½ to 5 gallons weekly.

April 23—Petroleum Coordinator Ickes said the report that the ration would be 2½ to 5 gallons weekly was "very unfortunate" and blamed it on "some poor prophet." "If," he said, "we are able to carry out our plans, there will be no such cut down." An anonymous aide of Ickes' estimated ration would be 25 gallons a month.

April 24—Ickes' aides said plans for 1,500-mile pipeline from midcon-

(Continued on Page 60)

PISTON RINGS

WILKENING MANUFACTURING COMPANY,
PHILADELPHIA. In Canada: Wilkening Manufacturing Company (Canada) Ltd., Toronto.



"It's terrible! Every time I push the starter button, the top goes down and my wife pops out of the back seat!"

WHO'S RIGHT?

(Continued from Page 59)

tinent field to Philadelphia and New York to relieve gas shortage were being revised to save steel. (Twice proposed by Ickes previously, the pipeline has twice been vetoed by WPB because of steel required.)

April 28—Ralph K. Davies, deputy petroleum coordinator, said heavy demands on transportation facilities might extend the shortage area at an early date.

April 29—Refiners in Bradford-Oil

City area of Pennsylvania reported tanks overflowing with gasoline that could not be distributed. Davies denied report that deliveries to retailers in East would be cut to 50 per cent beginning May 1.

May 3—Ickes told Eastern automobile operators that there was no prospect that the transportation situation would improve.

May 4—Under powers conferred that day, Joseph B. Eastman said the Office of Defense Transportation will act to get "surplus" cars off streets and highways "through some form of rationing tires and gasoline".

May 5—Cut in deliveries to 50 per

cent in the East announced to become effective May 15. (Reports that this move would be made were denied by Davies on April 29.) The action was taken on recommendation of Harold Ickes, Davies' chief.

May 6—Pamphlets issued to registrars indicated that basic gasoline rationing would be somewhere between 2 and 6 gallons.

May 7—Leon Henderson announced basic ration would be 2 to 3 gallons.

May 8—Ickes asked American Petroleum Institute to cease publishing its weekly figures showing stocks of gasoline on hand.

May 10—Leon Henderson announced basic ration would be 3 gallons, or 21 gallons over a 7-week period, and declared the 3 gallons for a non-essential user "a damned sight more than he's entitled to".

May 11—As registration for gas rationing started, Ickes ordered shipment of fuel oil to East speeded up at expense of gasoline. OPA suggested that one aim of rationing is to save tires. (There are 20,000,000 cars that run on tires in areas not affected by rationing.)

May 12—it was announced that deliveries of gasoline in Oregon and Washington would be reduced to 50 per cent, effective June 1. Earlier curtailment had cut current deliveries 33 1/3 per cent.

May 13—Rationing officials were "scandalized" by the number of persons obtaining X and B-3 cards. New York's acting rationing administrator Lee S. Buckingham announced that criminal prosecution might be invoked. "Let us remember," he is quoted as saying, "that gasoline rationing is a serious war measure and should be accepted and obeyed as such." In Springfield, Mass., a school official was quoted as saying: "Rationing is producing a nation of liars." Twenty of the 250 members of Congress said to have obtained X cards turned them in for cards of lower rating.

May 14—Congress battled over right of members to X cards. Ickes told press conference that rationing area may be extended as a means of conserving rubber and that there was no need for an extension "from a petroleum point of view", except in the Pacific Northwest. Rationing, he added, may start there June 1. OPA announced rationing for Oregon and Washington, effective June 1.

May 15—Acting on press-conference suggestions of President Roosevelt, Leon Henderson told local boards to make public types of ration cards issued by OPA and the names of persons receiving them. Senate defeats 66 to 2 a resolution that would have bound its members to renounce special gasoline privileges.

May 16—OPA inquisitors at Camden, N. J., stopped hundreds of motorists on way from Philadelphia to seashore points, demanding to be shown (Continued on Page 62)

Help Your VAN DORN Tools Do More!



Here's How . . .

Get all the work you can out of your Van Dorn Electric Tools in these days when good mechanics are hard to get and the repair jobs are rolling in. Why not check up on the accessories suggested at the right and on your supply of sanding discs, rubbing pads, buffing bonnets and cleaning and rubbing compounds. Your Van Dorn Tools are powered for hard work, for continuous work, for extra work. Your Van Dorn Jobber will help you—and he has a copy of "Care and Maintenance of Electric Tools" for you. It gives valuable information for adding life to your present tools. It lists the 26 Van Dorn-owned Factory Service Branches for quick repair and overhaul of tools when needed. The Van Dorn Electric Tool Co., 727 Joppa Road, Towson, Md.



VAN DORN DRILL WITH HOLE SAW

cuts clean, round holes up to 4" in diameter in any material a hacksaw will cut.



BENCH DRILL STAND

makes your Van Dorn Drill into a drill press for accurate work.



CARBON-REMOVING BRUSH

cleans carbon faster, better.



HORIZONTAL DRILL STAND

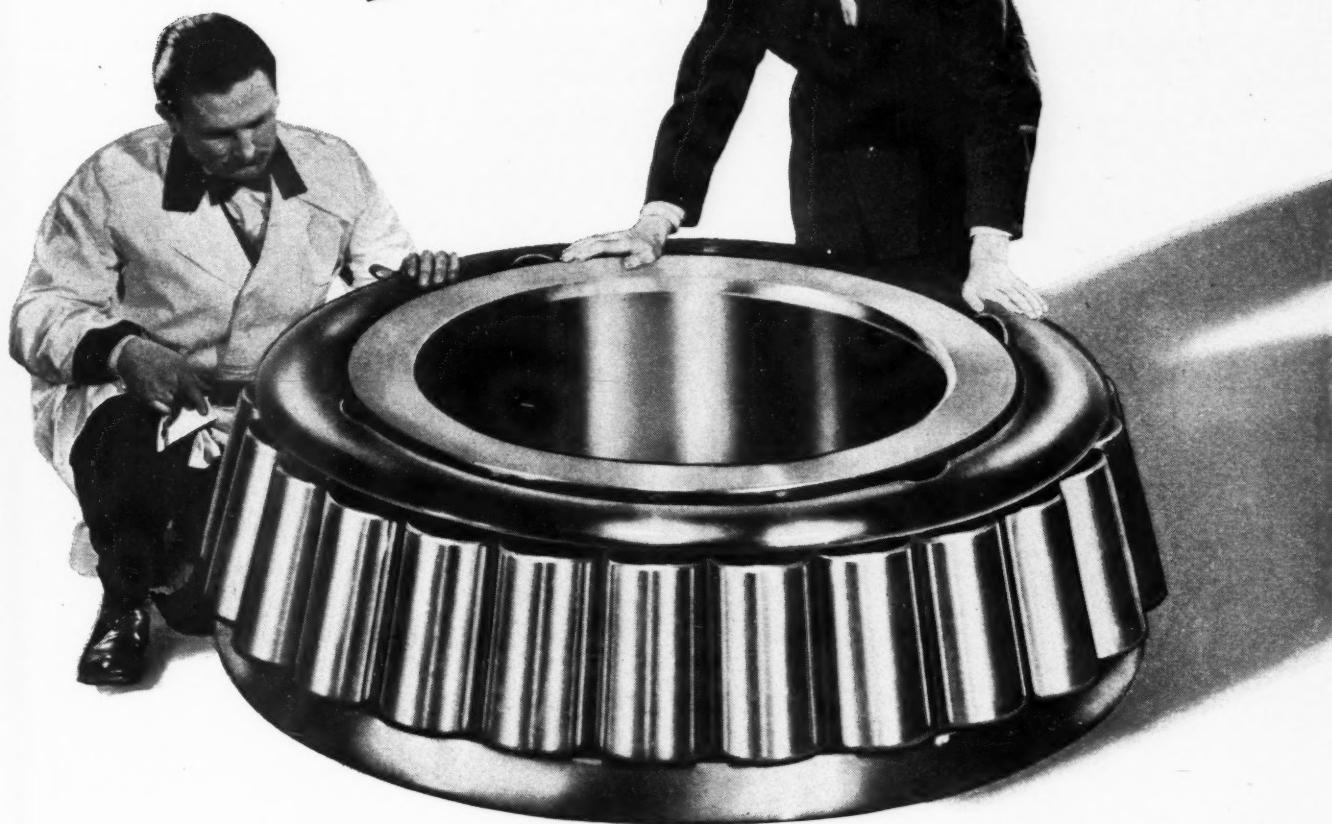
permits use of Drill for light grinding, buffing, polishing.

"Van Dorn"
(DIV. OF BLACK & DECKER MFG. CO.)
PORTABLE ELECTRIC TOOLS

Looks Like a Better Bearing...and IS

YOU CAN SEE THE
EXTRA LOAD
CARRYING ROLLS

YOU CAN'T SEE
THE LONGER LIFE
BUT IT'S THERE



● No, you can't see the extra life and capacity, but it's there just the same. Why? Because the cage of the conventional tapered roller bearing has been entirely eliminated and the in-between space filled with load-carrying rolls.

With more rolls to carry the load there is naturally more capacity. And with each roll doing less work the bearing lasts longer . . . usually twice as long, on the average.

—Use Tyson Cageless and see the difference.

Cageless FOR HARD SERVICE

Cage-type FOR REGULAR SERVICE

Tyson

TYSON ROLLER BEARING CORPORATION, MASSILLON, OHIO

WHO'S RIGHT?

(Continued from Page 60)

their ration cards, and repeating questions asked on rationing applications, advising some drivers to turn in high cards for lower ones. Many were driving on gasoline purchased before rationing went into effect.

May 18—After a White House conference, Senator Alben W. Barkley, of Kentucky, declared that "the only specific thing discussed was the gas and oil shortage with respect to the possibility of pipeline construction at

once to get oil to the Northeast section. Every effort will be made to see if we can get it started at once." The House Committee on Rivers and Harbors opened public hearings on proposed legislation authorizing construction of pipelines and barge canal to connect the Southwest oil fields with Inland Waterways to the North.

May 19—President Roosevelt told press conference that gasoline shortage should be treated as a national rather than a sectional problem. He said that extension of some form of rationing to other parts of the country is under discussion. OCD and

OPA conferred on a proposal for national gasoline rationing as a means of conserving tires. Arthur B. Newhall, WPB Rubber Coordinator, declared nation-wide gas rationing is "inevitable by the end of the summer" as a means of conserving rubber.

May 20—Ikes declared that even more severe gasoline rationing may be in store.

May 25—As car owners in Oregon and Washington prepared to register, OPA cancelled rationing for Pacific Northwest, which was to have become effective June 1. WPB order to cut deliveries 50 per cent in that area was rescinded, deliveries to remain at 66 2/3 of normal, because stocks have improved. Senator Barkley, after White House conference, said a statement on the use of pipelines and barges to relieve the fuel shortage in the East would be made right away. It was understood President Roosevelt would make the statement.

May 26—President Roosevelt told press conference he did not think there was much to get excited about in the present rubber situation and that he expected American ingenuity would develop a rubberless tire for civilian use before the present stockpile of rubber is exhausted. WPB Chairman Donald M. Nelson said nation-wide gas rationing would be put into effect to save rubber. Davies told House ICC Committee that nation-wide rationing would be necessary, not to save petroleum but to save rubber. Ikes declared the East could expect less gas before it could expect more, and that fuel oil would always get preference over gasoline.

Thus matters stood at press time. What the next day and the next would bring in the way of conflicting opinions and aims only the coming of those days could tell.

KNEE ACTION

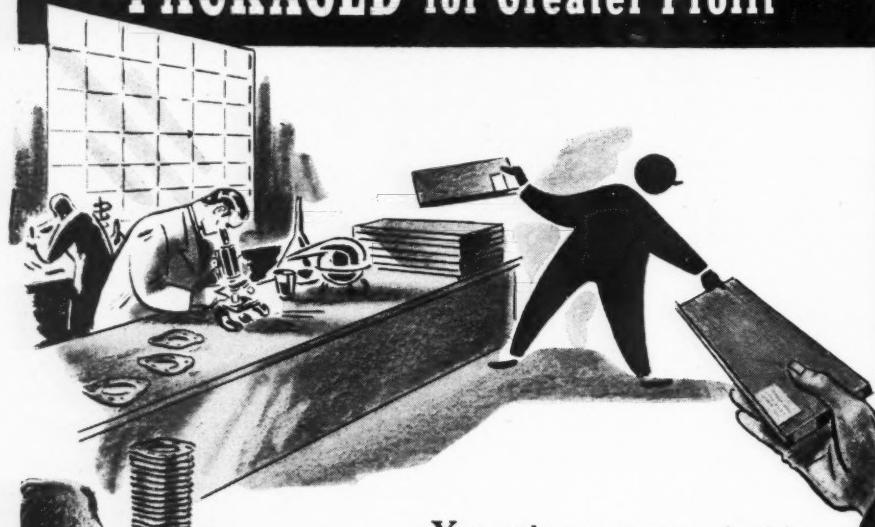
(Continued from Page 30)

leave a clearance of from .020 to .040 in. between the hex head of the bushing and the arm. Pull the oil seals in place so that they cover the threads of the pin.

Caster and camber are adjusted by turning the upper pivot pin with an Allen set-screw wrench after first removing the lubricating fitting in the front bushing of the upper control arm. The desired caster angle is zero, plus or minus $\frac{1}{2}$ degree, while the camber angle is negative $\frac{1}{4}$ degree, plus or minus $\frac{1}{4}$ degree.

When checking toe-in, place the steering wheel in the center position, and then check to see that the right front wheel is exactly straight ahead. To obtain the desired toe-in of zero to $\frac{1}{16}$ in., loosen the clamp bolts at each end of the left tie rod and turn the tie rod.

ENGINEERED for Finer Performance PACKAGED for Greater Profit



War is creating a scarcity of packaging materials which may necessitate changes in Fel-Pro packaging for the duration... we know you will understand and cooperate.

You and your customers both benefit when you sell Fel-Pro. Your customers receive gaskets that are specially developed to be super-resilient, softer-faced and extra enduring. You get car owner good will, increased volume and extra profit with Fel-Pro Gaskets, conveniently packaged in boxes or sets. Send today for full details of Display Panel offers and copy of complete Fel-Pro Catalog.

Research is the Key to Fel-Pro Success In Serving Industry, The Car Maker and the Automobile Replacement Field.

FEL-PRO

Gaskets

PUMP PACKING
GREASE RETAINERS

FELT PRODUCTS MFG. CO., 1510 CARROLL AVE., CHICAGO, ILLINOIS.



THE MAKER OF TOMORROW'S AMERICA

One day this war will end. What kind of America will emerge, as our country licks its wounds, considers the bill, and prepares to pick up again the threads of its destiny? Will it again tread those time-tried paths that led it to world leadership under the stimulus of free enterprise?

Or will it go off on uncharted tangents—up new strange roads that lead no one knows where?

The decision will be made by a man you may not know very well. He's a man you *should* know. He's America's Destiny Man. You'll find him at the end of the lane that runs off the main highway a few miles out from town. He's pretty busy these days tending his farm, working from sunup to long after sundown, to fill his country's war needs of foods and fats and fibres and other essentials. But he's not too busy to read, to listen to friends and neighbors, not too busy to *think*. He'll have his mind pretty well made up by the time this war ends. And what he decides should be—*will* be.

For Rural America not only elects a majority of our Senators, Congressmen and local legislators, but, more important, it gives them, through re-election, the weight of seniority that so greatly influences the make-up and thinking of important legislative committees.

The time to start building *your* post-war America is *now*. The place to build is Rural America. Whether you've a product to sell or a message to tell, you can talk to 2,600,000 prosperous, intelligent, thinking farm and rural families through FARM JOURNAL, the magazine that guides the buying and thinking of Rural America.

**FARM
JOURNAL**
AND Farmer's Wife

Graham Patterson, Publisher • WASHINGTON SQUARE, PHILADELPHIA

OVER 2,600,000 . . . OVERWHELMINGLY AMERICA'S LARGEST RURAL MAGAZINE

OPA REQUIRES PRICE STATEMENTS

Shops must file reports on commodities classed as cost-of-living items.

After two weeks' experience with selling parts and service under the maximum price ceilings imposed May 18, automotive servicemen have encountered many knotty questions in carrying out the provisions of the price-limitation order. The OPA, to clear up many of these points, has issued several supplements to the order, explaining in detail the things the retailer is obliged to do.

Even the rules for arriving at the highest price for March, 1942, which seemed clearcut and explicit, have developed some problems. A sale in March means actual delivery of the commodity or service and not a sale for future delivery. In the case of an article or type of service not ordinarily sold in March, the maximum shall be the price at which the article was offered for sale during March, provided the price was marked on the article on the counter, shelves, or racks in the shop or in price lists that could be examined by customers.

If any article, to be sold henceforth, is similar to an item sold in March but was not actually sold or offered for sale during that month, the maximum price shall be the March price of the item most nearly like it, that is, it must have the same use, must give fairly equivalent serviceability, and must belong to a type which would ordinarily sell in the same price line. In case the article to be sold differs entirely from those handled in March, the maximum price may not be higher than that of the highest March price of the most closely competitive retailer of the same class for the same article. If no competitive retailer handled the article, the price must not exceed the March price of the most closely competitive retailer of the same class for the similar article most nearly like it.

An article that cannot be priced under any of these rules is to be priced as follows: The retailer must select from the same general classification and price range as the commodity to be priced, the comparable commodity for which a maximum price is established under one of the preceding tests and of which the retailer delivered the largest number of units during March. He divides his maximum price for that commodity by its current replacement cost, and then multiplies the percentage so obtained by the cost to him of the commodity being priced. The markup allowed is the difference between the replacement cost of the article sold in March and the maximum price of that article.

Another method of setting maximum prices is permitted for summer

seasonable goods but no automotive supplies are on the list of such goods.

The automotive serviceman must also bear in mind that certain goods handled by him are to be sold at a fixed price regardless of the March levels. These are new and second-hand machine tools, wool alcohol, used steel barrels or drums, retreaded and recapped rubber tires, the retreading and recapping of rubber tires, and basic tire carcasses, new passenger cars, used tires and tubes, original equipment tires and tubes, farm equipment and motor fuel sold at service stations. All these are covered by price ceilings set in orders other than the general maximum price regulation.

Ceiling prices are the maximum. There is nothing to prevent selling a part or service at a lower price.

Complete records must be kept by the retailer. He must preserve all existing records of March, 1942, prices and keep the same kind of records or documents relating to prices charged after May 18. He must prepare a statement of highest prices charged for goods and service in March and keep records showing the basis for determining the maximum price of any item sold after May 18. He must continue to provide the customary sales slips and give receipts, and must properly identify all merchandise in displaying prices or preparing statements of maximum prices.

The statement of highest prices charged in March must be completed

by July 1. It must be kept in his shop and made available for examination by any person during his customary business hours. This statement must show (a) the highest prices at which he delivered or offered to deliver during March every item of merchandise in his store; and (b) his customary discounts, allowances, or price differentials to different purchasers or classes of purchasers.

Certain commodities have been designated as cost-of-living items. If a service shop carries any such item, he must prominently display his ceiling prices for such goods and must file with his nearest War Price and Rationing Board not later than July 1 a statement showing these prices. He must keep the statement up-to-date by submitting each month an additional statement showing ceiling prices for any cost-of-living commodities newly offered for sale during the preceding month.

The cost-of-living items on which service shops must post ceiling prices and make reports are gasoline, kerosene, fuel oil, lubricating oil, tires and inner tubes. A few other items, sometimes carried by service shops, such as bicycles and bicycle tires, flashlights, cigars and smoking tobacco, and ice cream, must be treated in the same way.

The serviceman who wishes detailed information on the maximum price regulation can do nothing wiser than obtain a copy of Bulletin No. 2 from his nearest OPA office.

Recapped Tires Good for 10,000 Miles, Says OPA

Recapped passenger-car tires that will travel as much as 10,000 miles and give motorists two years' service under wartime driving restrictions



"What I'm really looking for is some device to remove stolen tools from customers' pockets!"

are the aim of the government's most recent tire-conservation program, according to the Consumer Division of the OPA. Tires recapped with some of the better grades of reclaimed rubber now being produced may last through as many as 10,000 miles of city driving, the division points out.

The WPB has specified two kinds of camelback. Grade C, for truck tires, can be made with restricted amounts of crude rubber. Grade F, for passenger-car tires, must be made wholly of reclaimed rubber. According to the Consumer Division, Grade F camelback now in production is capable of giving from 5,000 to 10,000 miles.

Firm Name Changed

In a recent letter signed by W. C. Allen, vice-president in charge of sales, the Modern Equipment Corp. of Defiance, Ohio, makers of PAR air compressors and PAR refrigeration equipment, announced that, effective immediately, the company will go under its new name, Lynch Manufacturing Corp.

NEW profit makers

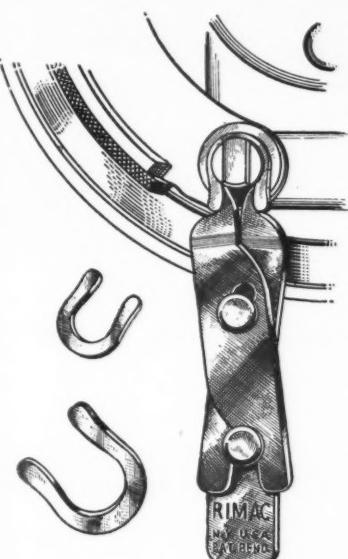
PARTS TOOLS

EQUIPMENT

ACCESSORIES

Removes Anchor Washer

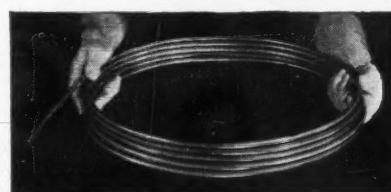
Rinck-McIlwaine, Inc., 16 Hudson St., New York City, has added an anchor washer removing tool to its line of automotive service tools. This tool, illustrated, is designed to remove the horseshoe washer which fits around the anchor pin and holds the brake



shoe in position. A few light taps at the base of the tool removes the washer without damage, so the washer can be used over again. List price, \$1.00.

Steel Tubing for Gas and Oil Lines

The Imperial Brass Mfg. Co., 1200 W. Harrison St., Chicago, Ill., announces a copper coated, tinned steel tubing which can be used to replace copper tubing for gas and oil lines. This tubing is soft tempered and can be used also for vacuum lines and hydraulic brake lines on cars, trucks, buses and tractors. It is copper-plated inside and outside, and has an additional tinned coating on the outside; it can be used with flare and inverted flare fittings, can be bent, flared, soldered, brazed and welded. It is said to have a high resistance to vibration fatigue. Furnished in 25-ft. rolls in



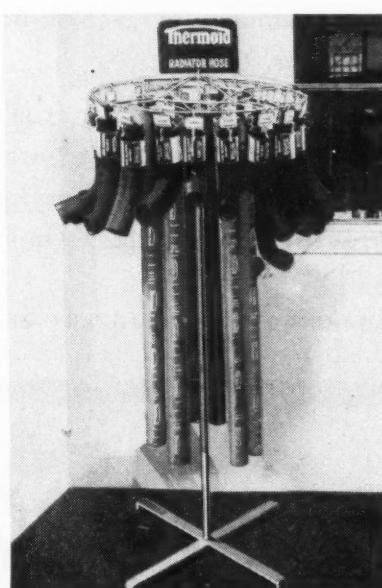
$\frac{1}{8}$ in., $\frac{3}{16}$ in., $\frac{1}{4}$ in., $\frac{5}{16}$ in., and $\frac{3}{8}$ in. sizes. Identified as Imperial Bundy Tinned Steel Tubing.

Reminder Stickers

To aid brake servicemen in merchandising Red-Bak brake lining, Johns-Manville Corp., 22 E. 40th Street, New York City, recently released to the trade booklets of reminder stickers. These stickers are similar to those used by filling stations to indicate oil-change periods. Space is provided on the sticker to fill in the mileage at which the brakes were relined, and for checking the mileage at which the car was returned for a check-up of the brake adjustment.

Radiator Hose Merchandiser

Thermoid Co., Trenton, N. J., has announced a floor stand with a revolv-



ing top for merchandising Thermoid radiator hose. It stocks and displays both curved and straight hose, and is supplied with hooks enough to accommodate 40 curved or straight pieces, with reserve space for 15 to 20 additional pieces. This radiator-hose floor merchandiser is available in a deal which includes 30 pieces of Thermoid curved hose and seven 3-ft. lengths of Thermoid straight hose. The deal also includes a number of pieces of practical and useful sales and advertising material.

Gunk Announces

New Products

The Curran Corp., Malden, Mass., has announced the development of two new products: Gunk XP-92, and Gunk Concentrate P-96.

The XP-92 is a concentrate solvent to be diluted with water and used as a safety replacement for naptha, gasoline and kerosene in hand-wiping operations. Claimed to have high solvency against mineral oil or dirt, not to de-oil the skin, to have no toxic vapor, no flash or fire point, and to leave an invisible rust preventative film so thin it cannot be detected.

Concentrate P-96 is a self-emulsifying degreasing solvent diluted with kerosene or light fuel oil.

Bearing Washer

The first step in the procedure of lubricating ball and roller bearings is to wash out the old grease, dirt, etc. For doing this job, Ahlberg Bearing Co., 3098 West 47th Street, Chicago, Ill., has developed a bearing washer which will accommodate all bearings up to 4 in. in diameter. The unit has a sealed compartment for the solvent, and a washing gun that flushes away all old grease and dirt. Provision is also made for a compressed-air dryer.

"Too Little Too Late—"

CAN'T WIN YOUR BATTLE FOR
SERVICE BUSINESS, EITHER

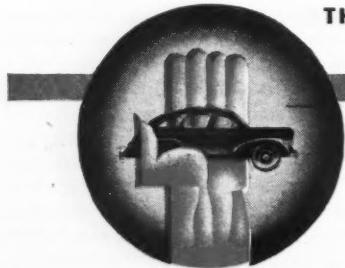
- Too little equipment—too late to get more! That will be the story of the losing side in today's battle for service business.

The success stories on the "service front" will be written about those operators who recognize now that service will hold the spotlight for the duration and who are doing something about it.

Lifting equipment is the backbone of your service operation—more than 60% of all service jobs require lifting the car at some point. So look first to your jacks and lifts—you can't afford to be caught with too little, too late.

Take careful inventory of your lifting equipment. It is still not "too late" to bring it up to "fighting strength" for the duration. Walker has jacks—Walker has lifts—ready for immediate delivery (while they last) without need of any priority assistance. Call in your Walker Jobber and let him check over your lifting equipment and suggest additions or replacements.

THE WALKER MANUFACTURING COMPANY OF WISCONSIN, RACINE, WISCONSIN



Get set now with

BOWES EQUIPMENT HELPS YOU
TO LOCATE AND OVERCOME

*"The Enemy from
Within"*



BOWES TIRE SAVING STATIONS HELP TO SAVE AMERICA'S RUBBER

- Sure, most of the dangerous aliens have been rounded up by the Government . . . but a whole lot of "fifth columnists" are still at large . . . and ready to do mischief.

"Tire Cancer" . . . casing breaks . . . nail holes . . . pinched tubes and casings—these are just a few of the hidden enemies lurking in wait for every motorist.

Bowes-equipped service stations and Bowes-trained service men know how to do a good, safe job of tire

repair . . . and the motoring public is learning to depend on Bowes "Tire Saving Stations" to help pull the country through the rubber shortage.

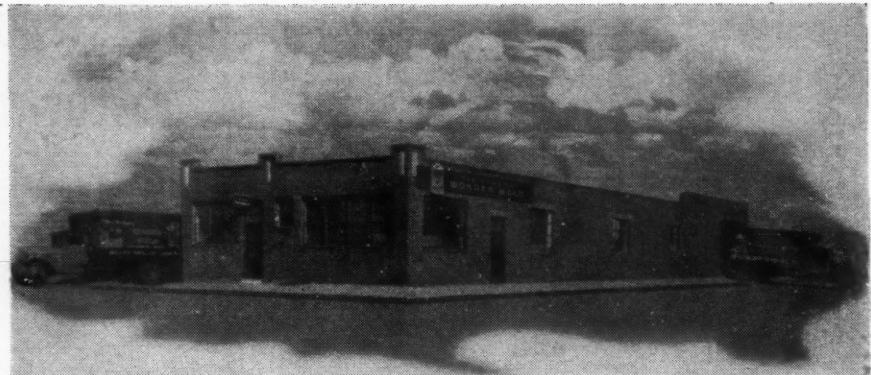
Bowes equipment is essential to every tire-saving emergency . . . from tube repairs to various types of casing breaks.

Is your station equipped and manned to do a good safe job of tire repair? If so, you can qualify for one of the attractive Bowes "Authorized Tire Saving Station" posters, after your men have been Bowes-trained to keep 'em rolling. Ask your Bowes distributor for the details.



Dependable
TIRE SAVING SYSTEM
BOWES "SEAL FAST" CORPORATION, INC. • INDIANAPOLIS

New building recently occupied by the Miller Manufacturing Co., Camden, N. J. Growing demand for the company's automotive products has caused the firm to move several times since it began operations in 1936.



FIFTH AVENUE OR BURMA ROAD

JOHNSON
BRONZE

Sleeve type Bearings Deliver the Goods

♦ The stop and go traffic of Fifth Avenue . . . or the gruelling service of the Burma Road are all part of a day's work for JOHNSON Bearings. An extra measure of quality found in every Johnson Bronze product enables them to meet all types of operating conditions.

When you place your bearing requirements with Johnson Bronze, you gain the advantage of modern manufacturing methods . . . skilled men . . . and over thirty years of bearing experience. Regardless of your application we can help you secure greater performance and longer life, usually at a lower cost. Why not write today?



JOHNSON BRONZE
Sleeve BEARING HEADQUARTERS
455 S. MILL STREET • NEW CASTLE, PA.

Takes Larger Quarters

Due to an expanding demand for its products, the Miller Manufacturing Co. recently moved to its new building at 1100 32nd St., Camden, N. J. The company began operations in 1936 in small quarters and has moved several times to larger plants. The new building has 9,000 sq. ft. of floor space.

At the present time it operates 16 warehouses in various parts of the country, as well as a warehouse in Canada and another in New Zealand.

GET BRAKE WORK

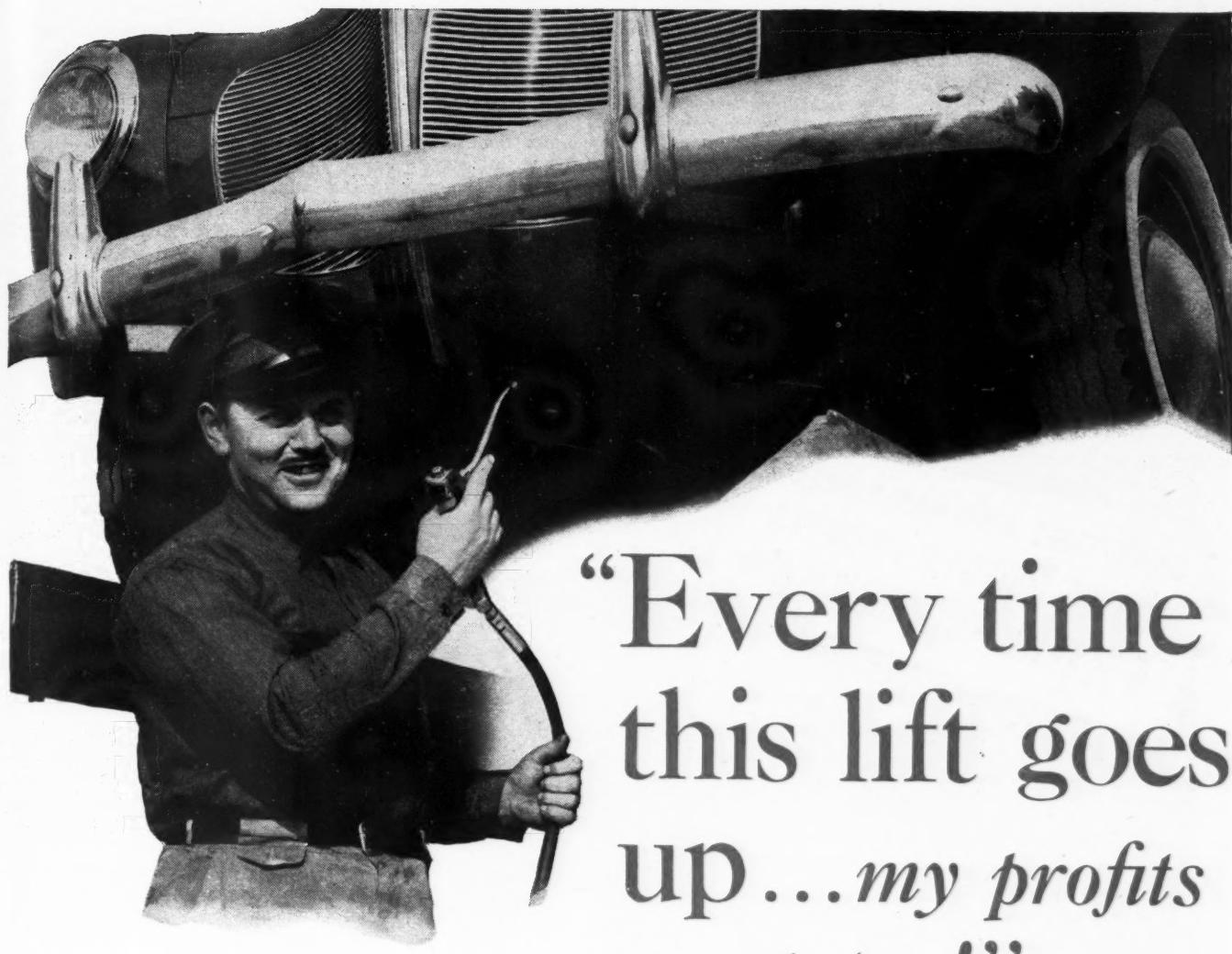
(Continued from page 29)

tention of customers to the completeness of his equipment. They like it and tell their friends about it. "It is the cheapest and most effective advertising obtainable," Martin explains. Still he does not depend on word-of-mouth advertising exclusively. He takes space regularly in newspapers, devoting a good share of it to publicizing his equipment.

Martin is convinced that opportunities to create more service are boundless right now, because of the war emergency. Further, he believes the opportunity will carry over to peace time. "Once you convince customers that your service is honest and efficient, you won't have any trouble selling them all the service they need, and at a profit."

Bomb Control

Soilicide Laboratories, Montclair, N. J., has developed product which is claimed to smother incendiary bombs. It is known as Tat Blankette, and the manufacturer claims that an incendiary bomb placed on the blanket will not burn through. In controlling an incendiary bomb, one Tat Blankette is placed on the floor, the bomb placed on the Blankette, and another Tat Blankette placed over the bomb. This seals the air and prevents the bomb from doing further damage.



**"Every time
this lift goes
up...my profits
go up too!"**

[Times are serious. Motorists are taking extra good care of their cars. And you have got to make extra efforts to build up the best paying departments of your business.]

Now is the time and here is the way to build a healthy lube business . . . and boost your profits!

Today most car owners can be sold on the wisdom of getting and *paying for good lubrication.*

Sell them genuine Marfak—the nationally advertised Texaco chassis lubricant that outlasts ordinary grease—that won't squeeze out, wash out or wear out—that will get you more lube business and help you *keep it.*

YOU CAN MAKE MORE



MONEY WITH MARFAK

Remember—a good lube service is your best insurance right now for more business.

Let your Texaco man tell you how to get more business with Marfak. Call the nearest Texaco Distributing Plant or write to The Texas Company, 135 East 42nd St., New York, N.Y.

PERSONAL SERVICE

(Continued from Page 19)

might happen—but it also means a type of service that prevents empty shops, prevents idle men, prevents customer dissatisfaction, and, last but not least, helps to prevent going out of business.

Speaking of preventive service, the follow-up system should be used steadily, thoroughly and intelligently to keep your lubrication hoist or hoists busy every hour of the day. The man or men who lubricate cars

in your shop should be of such a caliber that they are fully capable of thoroughly inspecting each car for the additional service it needs before it leaves the shop. If your present lubrication man or men are not able to do this, you will make no mistake to put the best diagnosis man in your business on this job and keep him there.

His inspection can find more worn fan belts, broken spark-plug porcelains, high-tension cables with cracked insulation, collapsed water house, weak batteries, loose, worn, or frayed battery cables, mufflers that are rusted through, worn tires that

indicate some bad front-end condition, loose tie-rod and drag-link connections, loose steering gear, loose front-wheel bearings, engine oil leaks, worn spring shackles, burned-out headlights, tail lights, stop lights, dash lights, and dome-light bulbs, horns that won't blow, windshield wipers that won't work, windshield wiper blades that are no good, brakes that need adjusting, clutch plates that need replacing, and other appearance and convenience items too numerous to mention. All these needed services can be found by external visual inspection without disassembling anything.

By taking off one wheel, it is very simple to find out whether or not the brakes need relining.

Listening to the engine while it is warm and running at idle speed will show up noisy tappets that need adjusting, and, if the engine does not idle smoothly, it may be an indication that some of the tappets are too tight. This condition can soon cause burned valves, and readjustments at the proper time can save the owner the cost of a complete valve overhaul.

These items are mentioned as a few than can be found with a minimum of effort and time, but, of course, if you are planning on your parts and labor sales paying more than 100 per cent of your fixed expense, you will establish a complete inspection for every car that rolls into the service department with the exception of the cases where the owner absolutely refuses to have the inspection made. If properly handled, these cases will be few.

It is impossible for any man to say positively whether automobile service dollar volume is going to increase or decrease nationally in 1942. There is no assurance that 1942 can be compared to any year of World War I with any accuracy because of the enormous increase in the importance of the automobile in business and domestic life. When real American business men are in doubt about what the future holds in store for them, they fall back on sound business fundamentals that have brought them through previous crises and then play the cards close to their bellies.

Of course, if a car dealer was making his parts and labor sales pay 100 per cent or more of his fixed expense in 1942 and he wants to assume that there is going to be an increase in service dollar volume nationally in 1942, he can spend his time this year playing golf and fishing, especially when he knows that a certain amount of service business will be forced to come to his shop from car dealerships that have gone out of business and from others that will go out of business.

But it still seems likely that the car dealer who is an American business man will not make any rash

(Continued on Page 78)

The **Hydra-Pak** HYDRO-UNIT is right in front of you — on the tool itself —

WITH HYDRA-PAK, you're all set for bigger profits from body and frame straightening! Here's the fast, accurate, one-man way to handle a full range of tough rebuilding and reconditioning jobs . . . with minimum investment in equipment!

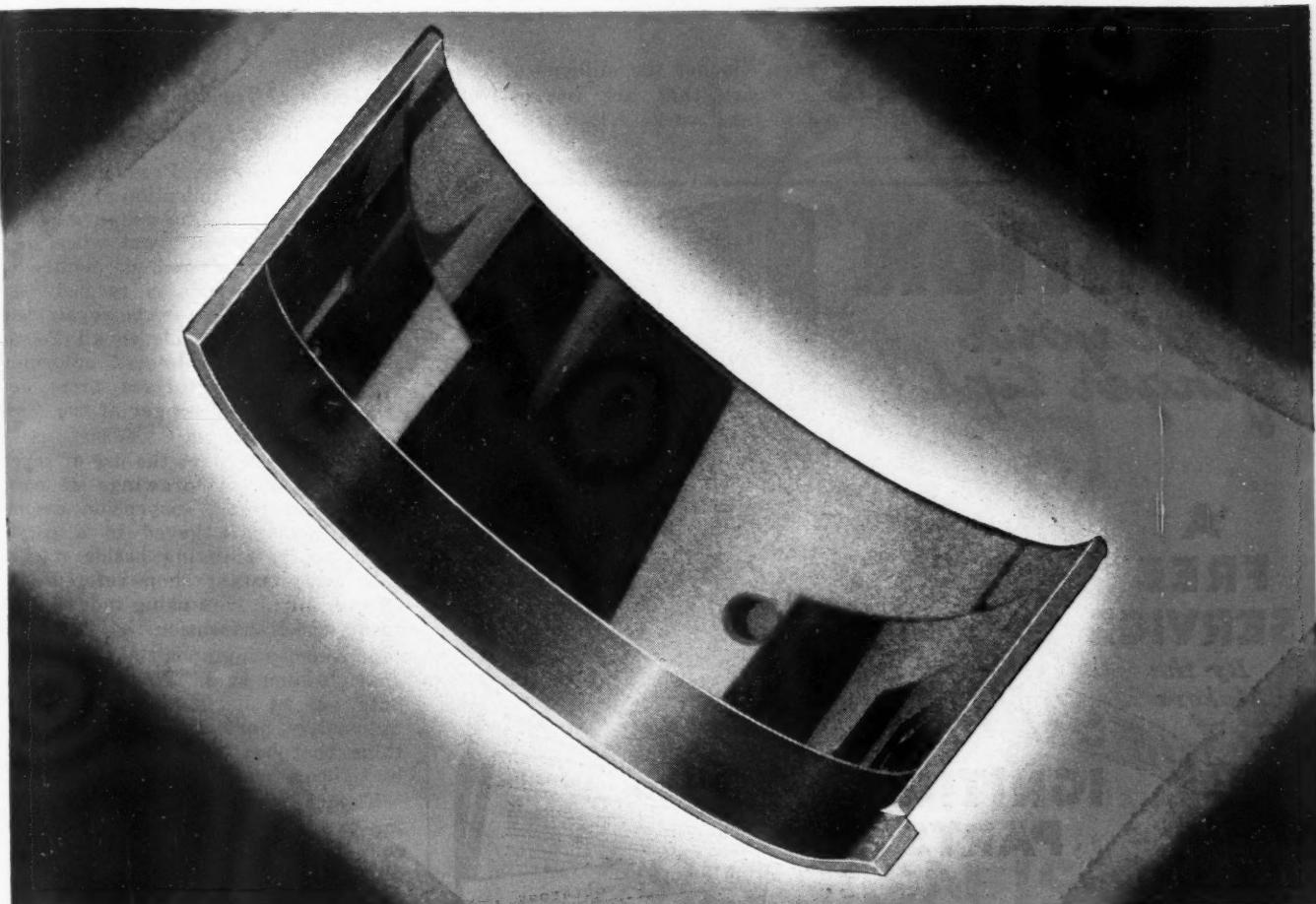
With Hydra-Pak, 10 tons of controlled hydraulic power are at your finger-tips . . . with the hydro unit right before your eyes . . . and with positive control that could squeeze an egg without breaking it! No remote motors . . . no cumbersome hoses—just speed and power and sureness! No danger of over-riding or "easing-off". Instant, automatic retraction saves hours of shop time. Kwixtension feature for lightning-fast extension on the job. Complete accessory equipment gives limitless range of pulling—pushing—bending—clamping—lifting—pressing—and spreading operations in the hands of any competent mechanic. Ask your **Snap-on** salesman to show you the film, "Thar's gold in them thar wrecks."

SNAP-ON TOOLS CORPORATION 8036-F 28th Ave., KENOSHA, WISCONSIN

Snap-on SERVICE TOOLS
The Choice of Better Mechanics

FOR ALL REPLACEMENTS..

Use MONMOUTH Micro Engine Bearings
as Specified and Used on Millions of New Cars



Monmouth Micro Engine Bearing with section of bearing metal removed to show extremely thin but uniform babbitt lining—the feature that is responsible for greatly increased life of this bearing.



Master stocks of Monmouth Engine Bearings are maintained in NAPA Warehouses from coast to coast, assisting hundreds of jobbers in every section of the country to give prompt service even on rarely called-for numbers.

MONMOUTH Micro Engine Bearings are produced by the world's acknowledged leader in bearing design, engineering, research, and precision manufacture.

Car makers universally concede these bearings are tops and back their opinions with millions of cars and trucks equipped with this ultra precision, insert type, steel-backed engine bearing.

The Monmouth Micro Engine Bearing stands head and shoulders above all others in accuracy of fit, in performance under load, and in long life. It should be used exclusively for all car and truck motors of 1941 and 1942 models in which it is original equipment—list on request.

Specify Monmouth Micro—for all replacement jobs—insure customer satisfaction, good will, and repeat business.

THE MONMOUTH PRODUCTS COMPANY, CLEVELAND, OHIO

For Engine Bearings
Clutch Plates and Parts
King Bolt Sets

Monmouth
is the name

Mechanics Are Urged to Remain on Jobs

Along with a release offering suggestions on the conduct of authorized repair shops under war conditions, the American Automobile Association recently sent the shops a letter emphasizing the importance of mechanics to the war effort.

"There are some 30 million motor vehicles in the United States now in operation. It is a reasonably safe conclusion that a large majority of these vehicles will continue to operate for quite a period of time . . .

"While it may be true that you feel you are not directly connected with the war effort when you are working in automobile repairing—just remember—the great war effort depends in a great degree upon the continuous and successful operation of our automobiles . . . Of all miles driven by automobile owners it is an established fact that 274 billion passenger miles, or half of the total driven, are 'necessity' miles each year.

"Just consider the millions of passenger cars that are imperatively need to take workers to work. Con-

sider the millions of trucks that meet our peace-time needs. They are still in use and additional trucks are now used to take care of the country's war needs . . . These cars and trucks must continue to operate—they must be kept in proper repair.

"Serve your country, serve your family, serve the car owner, and serve yourself best by doing the job you know best—Automobile Repair Work."

Toledo Offers New Chart Of Front-End Parts

The Toledo Steel Products Co. has announced the publication of a unique new wall chart on the complete Toledo line of independent front wheel suspension parts. Based on months of research, the chart is termed "the most comprehensive in the repair field today." It is available to all Toledo "Men Who Know Motors," according to a statement received from Joe Adams, general manager of the Merchandising Division.

The chart employs the use of seven detailed cutaway drawings of complete front wheel suspension assemblies—each part keyed to a corresponding part listing beside it. In this way, instant shop reference is offered for all cars using independent front wheel suspension.

In commenting upon the new Toledo chart, Adams said, "This chart is the only one of its kind in the entire automotive parts field. It is something that has been urgently needed by jobbers and repair men alike."

The chart measures 39½ by 29½ in. overall. It is printed in two colors, green and black, on heavy-fiber stock, reinforced at corners and edges, for tacking upon shop walls. Jobbers and garage men may write to Toledo Steel Products Co., Toledo, Ohio, for information on obtaining a copy of this chart.

PERSONAL SERVICE

(Continued from Page 76)

favorable assumptions which might result in disaster because of an over-optimistic attitude, nor will he make any rash unfavorable assumptions which will cause him to go out of business voluntarily because of an over-pessimistic attitude. There is a solid middle path. Car dealers who have operated their service departments profitably in the past and car dealers who are ready to make their service departments operate profitably from now on should easily be able to stay in business—and when the war is over, they will be much better dealers than if they had gone out of business now and then started over again after the war.

"IGNITION" at your finger tips

A FREE SERVICE

By the Makers of

BLUE STREAK

TRADE MARK REG. U. S. PAT. OFF.

IGNITION PARTS

STANDARD'S "Blue Streak" Service Bulletins place at your finger tips the answers to many of the ignition problems that come up every day in the course of your regular work.

They can be of tremendous help to you—saving your time—enabling you to do a better job.

You can get these "Blue Streak" Service Bulletins every month, absolutely FREE, back issues for three years included, as a part of our Dealer Co-operation Service.

Write today for full particulars

STANDARD MOTOR PRODUCTS, INC.
37-32 Northern Blvd., Long Island City, N. Y.

MOTOR STANDARD PRODUCTS

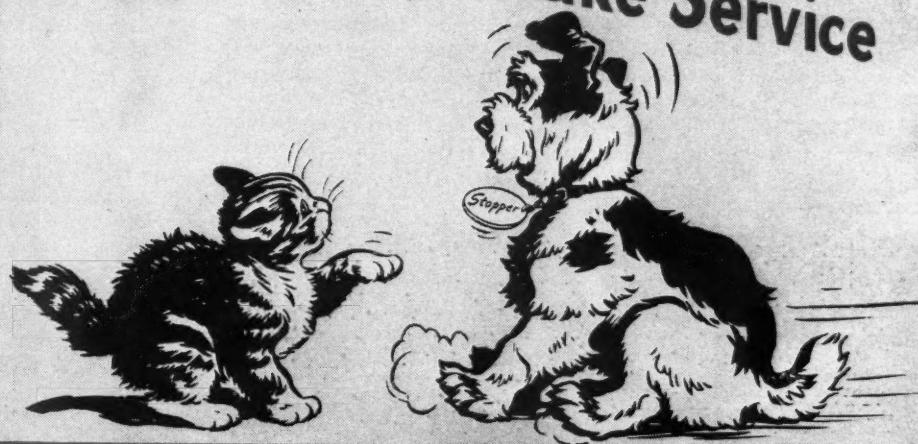
BLUE STREAK

IGNITION PARTS BATTERY CABLES AUTOMOTIVE WIRE

BLUE STREAK SERVICE BULLETIN

"The ABILITY to serve well is as important as the WILL to do so"

Safe-Stop Brake Service



American Brakeblok

BRAKE LINING



Join Up for More Brake Service and
More Profits. Ask About American
Brakeblok's "Stopper Program."



Master stocks in
38 NAPA Warehouses.
Jobbers everywhere
give prompt service.

American Brakeblok Division of The American Brake
Shoe & Foundry Company, Detroit, Michigan

THIS SIGN IS SURE GETTING AROUND

STOPPER the pup is a real fellow with repair shops and motorists everywhere! And why not? Full-page, four-color national magazine ads featuring Stopper for 15,000,000 readers; display material in repair shops; signs outside repair shops . . . it's the outstanding brake service and brake lining program of the year.

The "Stopper Sign" brings them in; it is available to repair shops everywhere. Tie up with Stopper; get your share of the business he helps create. It's easy through your jobber or NAPA Warehouse!

OUR INDUSTRY AT WAR

The strictness with which local rationing boards are scrutinizing applications for new tires and tubes has been termed "praiseworthy vigil" by Price Administrator Henderson. In January, boards in 40 states and the District of Columbia issued certificates for only 45 per cent of their quotas of passenger-car tires and tubes. The figure for trucks was somewhat higher. On the basis of 12 states from which reports had been received for

March, certificates had been issued in that month for 83 per cent of the passenger-car tires available, for 91 per cent of the new truck tires, and 72 per cent of the recapped truck tires.

* * *

Rumors that new motor trucks are being illegally acquired by truckers in violation of truck-rationing procedure has resulted in a new warning by the ODT that anyone converting to use any new commercial vehicle covered

by General Conservation Order No. M-100 without legal possession of the vehicle is liable to prosecution under the War Powers Act.

* * *

Ceilings on manufacturers' selling prices of camelback became effective May 11. Four grades were placed under the ceilings—grades A, C, E, and F, the latter being the only grade available for passenger cars. The ceilings are: Grade A, 28 cents; Grade C, 23 cents; Grades E and F, 18 cents.

* * *

Maximum wholesale prices for new tires and tubes were established by the OPA last month. The prices of tires and tubes for trucks are generally those prevailing in March, but passenger-car tire and truck prices are higher than March prices by about 16 per cent of the maximum retail price. Retail prices for new tires and tubes were established in January, and therefore underwent no change when general price ceilings were set last month.

The new wholesale price ceilings were required, the OPA explains, to save essential users and government agencies from paying the higher prices that would result from the present scarcity.

* * *

Tire-rationing regulations were amended May 23 to permit bus transportation companies to enter into new tire and tube leasing contracts with tire manufacturers or wholesalers. Under the original regulations, new lease contracts were not permitted, although those that were in effect during 1941 could be continued or renewed.

* * *

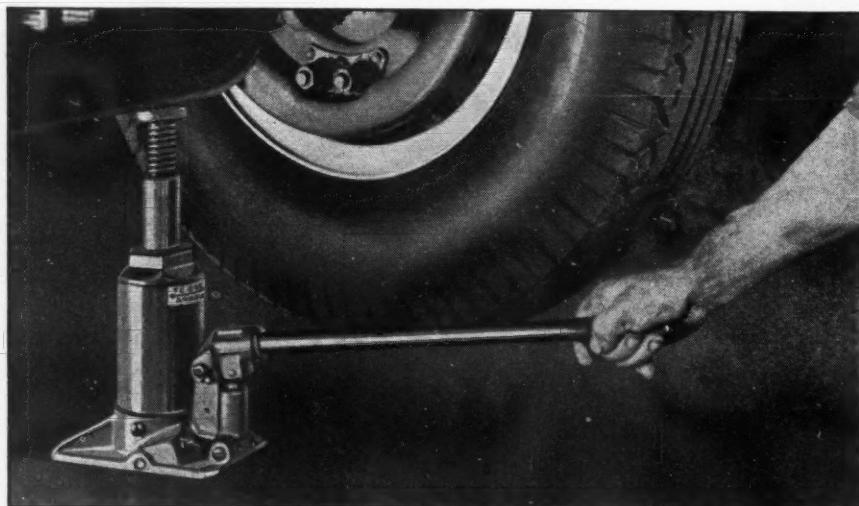
The OPA is definitely working on plans to buy what are termed "excess tires in consumers' hands," but details have not yet been worked out. So far the idea is called the voluntary sale plan, under which owners having more than five tires a car would be able to dispose of the excess to the OPA. One thing certain, according to Paul M. O'Leary, deputy administrator in charge of rationing, is that local rationing boards will not be asked to take in or resell tires.

* * *

The June quota for new and recapped tires and inner tubes is 16 per cent lower than the May quota, reversing the seasonal trend of replacement sales. Available in June will be 49,584 new tires for List A passenger cars, 479,051 recapped tires or recapping services for List A and List B combined, and 265,007 tubes.

* * *

Dr. Charles F. Phillips has been appointed chief of the tire-rationing branch of the OPA. A former associate professor of economics at Colgate University and marketing consultant to a food-store chain, Dr. Phillips has been with the rationing division of OPA since it was formed last December.



Men who anticipate tire trouble should not be caught without a HEIN-WERNER HYDRAULIC JACK



3 Tons

Hot weather driving is going to cause more punctures and blow-outs in old tires which are getting older and more worn out every month.

So—men who drive should be prepared to make tire changes on the road. It's a wise man who sees that his tool kit contains a super-powerful, easy-operating Hein-Werner Hydraulic Jack.

The H-W line includes Bumper-Lift Jacks for passenger cars, and truck jacks of 1½, 3, 5, 8, 12 and 20 tons capacity.



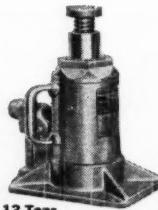
5 Tons

For details and latest prices, ask your H-W jobber or write us
HEIN-WERNER MOTOR PARTS CORP.

Waukesha, Wisconsin



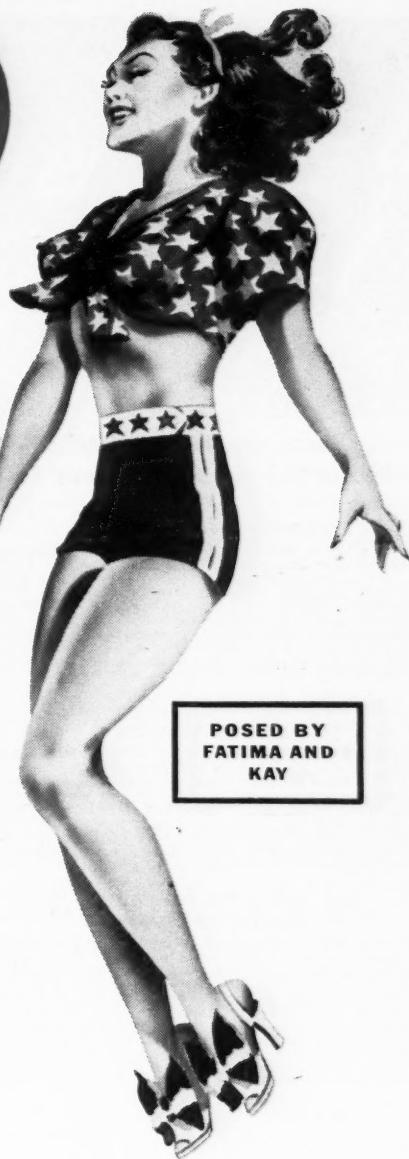
8 Tons



12 Tons

HEIN-WERNER HYDRAULIC JACKS
Are Built Right and Priced Right

RESISTANCE TO FATIGUE— Essential in Bearings, too!



POSED BY
FATIMA AND
KAY

● Yes. Resistance to fatigue is essential in bearings, too! The lining in *Genuine Ring-True "Precision-Lined"* bearings is so *thin*, resulting in resistance to fatigue so *high*, that bearing life is increased 90%. For many years most leading engine manufacturers have used Ring-True as standard equipment. For the longest, most trouble-free service use these same *Genuine Ring-True*

Genuine Bearings in your service work. Ask your jobber.

RING-TRUE BEARINGS



"Precision Lined" Ring-True Bearing lining is only .002" to .005" thick.



ALWAYS REPLACE BEARINGS IN SETS"

Complete Motor Bearing and Connecting Rod Service

CLAWSON & BALS, INC., Chicago
Factory Stocks in Principal Cities



Thousands of Automotive Maintenance Shops Buy and Use Each Annual Edition of the CHILTON FLAT RATE and SERVICE MANUAL

These are the most successful shops. They are the ones that make the most money. They do over 85% of the total repair and tune-up work on the Nation's 30 million cars and trucks.

WHAT THESE SHOPS SAY

They freely admit that a large measure of their success is due to their use of the Chilton Manual. "Could not stay in business without it"; "Impossible to know all the necessary facts this Manual supplies"; "Tells us how to charge and how to do every job"—these are typical of the hundreds of comments from users. One shop recently wrote they had had continuously lost money and were headed for bankruptcy when they began to use the Chilton Manual, and that today they are the leading shop in their locality, and are making money.

OVER HALF MILLION MANUALS SOLD IN 16 YEARS

This 1942 edition is the 16th edition. No Manual could survive for 16 continuous years unless it rendered a worthwhile service, because most of each year's users are the same shops that have used it continuously. And no Manual totals more than a half million copies distributed that has not delivered value to its users. The Chilton Manual holds the record for length of life and volume of copies sold of any Manual in the automotive field, if, indeed, not in every field.

YOU CAN HAVE CONFIDENCE IN CHILTON INFORMATION

A Manual that supplies charges for labor and material must be accurate or you would lose money using it. A Manual that directs you on service procedure must supply reliable data or you would lose more than you would otherwise. Therefore, the only Manual to buy and use is a thoroughly trustworthy one. The Chilton Manual was the first Manual of its kind to be issued. It is the oldest service of its kind. It is the largest. More shops use it than any other Manual. It has long since become a respected institution of the maintenance trade. You can trust the Chilton Manual.

REASONS FOR ITS RELIABILITY

The main reason is the Company behind it. Any Manual of any kind is nothing more or less than the concern that produces it. The Chilton Manual is a property of the Chilton Company, and the Chilton Company is the oldest and largest automotive trade publishing organization in the world.

The second reason is the men who make it. Chilton employs more editors than any other publisher. 10 men work all year to produce this Manual. All 10 are practical mechanics, former shop men themselves, who work out the problems and get their answers in the grease.

The third reason is that Chilton Editors themselves time-study the jobs they price, and the work they describe as to the best procedures. This Manual is not a paper and scissors compilation of material taken from every available source. It is original material that our Editors prove is correct to their own satisfaction before releasing it.

The fourth reason is that the Chilton Manual is printed in the Chilton Plant by the same printers who have now worked on 16 editions. None of the work is "farmed out" to other printers. We are the only publisher that prints such a Manual in its own Plant. This system keeps mistakes down to the absolute minimum.

SUPPLIES BOTH CHILTON RECOMMENDED FLAT RATE LABOR PRICES AND FACTORY PRICES

Every repairman knows that he cannot make money on factory prices. He doesn't have to use them if he has a Chilton Manual. This gives him Chilton Prices, far more accurate and closer to the correct amount he should charge, but if he wishes to use factory prices, they are also given in the Chilton Manual.

NEW \$2.00 PER HOUR FLAT RATE LABOR CHARGE

The 1942, or 16th Edition labor charges are based on a \$2.00 per hour rate. The rate for years has been \$1.80, but the new rate was used because of increased labor costs. Any rate in a nationally used Manual must be one that represents the average of all labor charges all

over the country. For the benefit of those shops that will charge less or more than \$2.00 per hour, a conversion table is supplied, as always, making it easy for anyone to decrease or increase the total job charge as per his own individual labor charge.

ALL JOB CHARGES REVISED

Every flat rate page in Chilton's 1942 Manual has been completely revised for the \$2.00 rate, and all Chilton job charges have been brought up to date.

Every parts price page in the Manual has been entirely revised in accordance with the very latest prices issued by parts manufacturers. This is an entirely new Manual in every respect. Do not therefore figure that if you have the 1941 Chilton Manual that it will do. You must have the 1942 Edition, especially in view of the present conditions, that call for the most recent information. The surest way to lose money is to try to save the small amount that you pay for the most recent Chilton Manual.

LABOR PRICES AND MATERIAL COSTS ON ALL CARS SINCE 1936

There is a price for every kind of repair job on every make and model for 7 years. All flat rate information on cars manufactured in 1936, 1937, 1938, 1939, 1940, 1941, 1942. And tune-up tables supply tune-up data on all makes and models back for 10 years, and in some cases, farther back than that.

ALL THE LATEST FACTS ALL THE 1942 PRICES AND DATA

Everything—every price and fact you'll need to know. Some 1942 parts prices even are included, although complete 1942 parts prices will be sent users in a separate supplement later, when the prices have become sufficiently complete and settled to issue.

33% MORE PARTS PRICES

A tremendous number of parts prices have been added to this issue, and most of these additions are body parts prices, for which there is such a demand. And there will be many pages of Body Repair Flat Rate prices also. There are 34,500 Body and Wreck Parts alone. There are 390 parts per car model. There are 128 pages of Body Parts alone.

45,000 TRUCK FLAT RATE LABOR PRICES

The Chilton Manual not only supplies labor charges on all makes and models of passenger cars back for 7 years, but, in addition, furnishes the largest amount of labor prices on truck repairing available anywhere. Nowhere else, in any one Manual, is assembled 45,000 truck flat rate labor prices such as the Chilton Manual contains. With truck repairing the most profitable of all repair work, and with the present defense necessity for efficient and speedy truck repairing, this one part of the Chilton Manual makes it invaluable.

BODY OPERATIONS—FLAT RATE CHARGES

These are so extensive that they run into 44 pages of text, covering all makes and models of cars made in 1936, 1937, 1938, 1939, 1940, 1941 and 1942.

These body operations charges are extremely important with body and wreck work being done in constantly increasing volume.

EASIEST SYSTEM TO USE

The Chilton Manual has always been the easiest to use. It is deliberately kept simple in arrangement to save its users time. One illustration of this is our placing parts prices across the page from the complete job prices. Each left-hand page has the parts prices. Each right-hand page has the Flat Rate job charges so everything is all together—visible at a glance, not separated into two sections, that would compel you to refer back and forth endlessly.

In the 1941 edition, we arranged the Service material instructions both by make and model of car and by units, and cross indexed both. This method has won such approval that it is being continued in the 1942 Manual. Now, in addition, we have placed the Quick Reference Tune-Up Data together with the major overhaul information.

Wait for your Chilton man to call

BE SURE THE NAME CHILTON IS ON THE MANUAL YOU BUY

950 ILLUSTRATIONS IN SERVICE SECTION

This is the largest number of photographs and sketches that any Manual of its kind has ever supplied. It is larger than any number that will be supplied by any other Manual in 1942.

GREATEST SERVICE MATERIAL EVER PUBLISHED

Detailed service instructions are furnished on every make and model of car under the name and model. First is supplied quick reference tune-up, step-by-step instructions in tuning up all cars. Then follows service directions on the units, liberally interspersed with sketches and photos.

To supplement the service data printed under the heading of each make and model of car, there is also supplied a complete section treating each unit in even more detail. Carburetors, Automatic Chokes, Fuel Pumps, Steering Gears, Front Wheel Alignment, Brakes, Shock Absorbers, Controls, Generators, Distributors—all units.

TABLES

All essential specifications, clearances, measurements are arranged in many tables that you will refer to constantly, such as—Shock Absorber Capacity Chart, Distributor Advance Specifications, Cam Angles, Torque Wrench Readings, Bearing Oil Pressure Test Data, Tune-Up Specifications on older cars, Truck Interchangeable Unit Table, Truck Tune-Up Specification, Truck Engine Specifications, Truck Front Wheel Alignment Specifications, Tractor Tune-Up Specifications.

PLEASE NOTE

This is not a manual for car owners who do their own repairing, although it is easily understood and operated. It is edited for professional mechanics and for apprentices who are now learning the business in greater number than ever before. We do not advertise this Manual to the general public or to car owners or tell them that by its use they can avoid going to repair shops for many jobs they can do themselves.

The professional automotive repairmen are our only customers. They have supported the Chilton Manual for 16 years and made it an institution. We therefore confine its sale to professional repairmen and thus support the trade that supports the Chilton Manual.

PLEASE NOTE ALSO

If you wish a Manual without waiting for the Chilton man who covers your section to deliver it, write to us. If possible, we will send the Chilton man to take your order. If this is not possible we will send you the Manual direct. We feel that you will be more satisfied, however, if you will wait for the Chilton man to call on you as he can go through the new Manual with you in detail, and thus render a definite service at the time of delivery. If he takes your order in advance of delivery, he can also tell you many things that cannot be covered by mail.

NO INCREASE IN PRICE

Chilton Service will cost you the same as heretofore. Despite increased publishing costs on paper, ink, binding, editorial labor, and general overhead and taxes, we decided to maintain the same reasonable price. We know you would pay more but we are not asking you to pay more.

AN INCREASE IN VALUE

Despite our decision not to increase the price, we have increased the Service Section by 64 pages, increased the number of parts prices by 33%, and have completely revised the Manual for the new \$2.00 per hour averaged national labor rate, which, of course, can be converted as to total job charge to any other rate simply by using the Conversion Table.



**VICTORY
IS YET TO BE WON!**
That's why it's more important than ever to replace a Timken Bearing with another genuine Timken Bearing.

Before the war if a bearing replacement was made with a bearing admittedly inferior to a Timken Bearing the car owner got the worst of the bargain. If the bearing failed he could perhaps get another.

With America at war, with replacement parts probably less readily available in the future than even now, and with many car owners dependent on their automobiles for transportation, such a "bargain" might prove to be a minor catastrophe as far as the personal and business life of a customer is concerned.

The service-repair shop operator who looks to the future—including the duration of the war and also after Victory—realizes that today it's far more important than ever to replace a Timken Bearing with another genuine Timken Bearing. Timken Bearings given proper maintenance and barring accidents will outlast the life of the cars in which they are used.

THE TIMKEN ROLLER BEARING COMPANY, CANTON, OHIO

Service-sales Division

TIMKEN
TRADE-MARK REG. U. S. PAT. OFF.
TAPERED ROLLER BEARINGS

JUNE, 1942

When writing to advertisers please mention Motor Age

HERE'S A PLAN TO

Keep 'em Rolling Back to YOU

FOR ALL SERVICE NEEDS

NOT TOMORROW
NOT NEXT WEEK
ACTION NOW

Tough going? You bet it is—but not for dealers using Pennzoil's pretested service selling plan. Here's the plan that helped an Elmira, New York dealer increase his active service customers by 87%—the plan that's helped hundreds of the country's most successful dealers turn occasional patrons into steady customers for all service needs!

BRINGS IN NEW CUSTOMERS

Need more service business? Then this is the plan for you because it is built to do just that—help bring in owners who can and should patronize you for service needs. Proof? Mendenhall Motors in St. Louis reports 1500 new service customers. A New York dealer upped active customers by 93%. And remember—these figures are from the dealers' own operating statements.

HELPS SELL ALL YOUR SERVICES

Don't think of Pennzoil's plan as just selling lubrication. It boosts your "take" in every department, and provides all necessary tools. More proof? A Detroit dealer reports service volume up 55%, customer labor sales up 64%, shock absorber service up 227%, brake work 127% better, lubrication volume doubled. A Kansas City dealer upped service income 132% with the plan.

KEEPS SERVICEMEN ALERT

Your servicemen will get behind this plan because it is easy for them to co-operate. The plan provides the tools to make this teamwork possible. Result: Service sales that otherwise might be overlooked or neglected.

You can sell every customer all the service his car needs.

Want to see how this plan can fit into your set-up—how it will pay for itself? The coupon will bring you full information—without obligation.

WRITE FOR THE PROOF TODAY

The Pennzoil Company,
Oil City, Pa.

Here's my name and address. Without obligation, I want to see actual figures on results obtained with your profit plan which sells all automotive services . . . want to see how it can help me!

Name _____

Street Address _____

City _____ State _____ MA-2

Following is a brief digest of important articles appearing in this issue of MOTOR AGE. Read the digest and discuss the service procedure with your customers.

BATTERY "HOARDING" UNWISE

Owners that bought batteries in excess of their needs so as to provide against possible future shortage outsmarted no one but themselves. Of all the things they might have tried to hoard, a battery is the one



that can be stored the shortest time. This article explains why, and also shows how deterioration can be kept at a minimum. Keeping stored batteries up to snuff is a source of new business during the war for every shop that sells batteries.

WHO'S RIGHT ABOUT GAS RATIONING?

This article doesn't solve the gas problem of the East, but it does point out the reason for widespread dissatisfaction—the conflicting and confusing statements of officials. It is bound to be a much-discussed article, not only by men who sell gasoline but also by the men who repair automobiles.

KNEE-ACTION SERVICE

In these days, when it is often more sensible to repair a bent, broken, or worn part than it is to throw it away and get a new one, an article such as this comes in extremely handy. It gives all the dimensions the serviceman needs to restore correct front-end alignment on the 1942 Chevrolet.

SPRAY GUN TIPS

A time comes to every spray-gun man when a job doesn't go right, regardless of how skillfully he wields the gun. Usually the reason is that the paint spray lacks uniformity or the right pressure. This article cites some of the causes of uneven spray—such as clogged passages in the gun—and explains the importance of maintaining an even pressure. Since painting is likely to be one of the most frequent jobs during the war, this is likely to be an article of growing value.



JOBBER'S OF THE JUNE

ONE of the most accurate gages of reader reaction to the editorial contents of a publication is the volume of reader mail. Of late, the always substantial number of letters received by MOTOR AGE from readers has mounted considerably, and the comment contained in these letters has been gratifying.

These readers, all of them practical servicemen, heap praise on MOTOR AGE for the type of editorial material they find in this 100 per cent service magazine. "It's just what we want to know," they say. Or, "It helps us understand what we're doing and where we're going."

This month's issue is no exception to the rule of helpful, timely articles. Look over the digests on these pages of the articles. Every one deals with a question that's uppermost in the minds of servicemen today.

CARBURETOR TUNE-UP

Following last month's picture article on overhauling the second type of carburetor used on the 1942 Pontiac Six, more pictures and text this month supply the needed dope on tune-up procedure for the same carburetor.



A DEALER PRODUCES FOR WAR

A good many American car dealers have done an excellent job of converting to war production, as the MOTOR AGE article last month showed, but it remained for a Canadian dealer to make the shift without disturbing his shop and equipment layout to any great extent. This article shows how his paint shop and upholstery department are making an important contribution to the war effort and keeping the whole plant busting.

PISTON RING SERVICE

Here's a text-and-picture treatment of a simple operation that has to be done exactly right if it is to be fast and accurate. Servicemen with new mechanics to break in are especially interested in this type of article just now.

DIGEST MOTOR AGE

HOW'S BUSINESS

A MONTHLY REPORT ON MAJOR ITEMS BY 500 JOBBERS

MAY, 1942

NATIONAL TOTAL	Good	Fair	Poor	NATIONAL TOTAL	Good	Fair	Poor
ACCESSORIES	Poor			REPLACEMENT PARTS	Good		
Abrasives.....	58	102	36	Axle Shafts.....	32	114	71
Anti-Freeze.....	31	46	86	Ball and Roller Bearings.....	109	101	22
Car Radio Sets.....	2	10	104	Brake Lining.....	130	86	18
Car Radio Accessories.....	2	15	97	Bushings.....	59	118	34
Chains.....	1	15	145	Chains (Timing).....	35	114	70
Heaters.....	8	156		Clutch Plates and Parts.....	119	89	13
Horns.....	3	40	119	Fan Belts.....	175	62	8
Lacquers.....	58	104	39	Gaskets.....	156	62	10
Oil Filters.....	130	83	17	Gears (Rear Axle).....	38	104	67
Oils and Greases.....	32	77	38	Gears (Transmission).....	54	114	39
Polish.....	44	128	40	Mufflers.....	143	82	11
Seat Covers.....	41	98	57	Pistons.....	92	104	30
Thermostats.....	2	34	145	Pins.....	100	100	24
	404	760	1079	Rings.....	142	73	13
				Radiators and Cores.....	20	49	91
				Spark Plugs.....	141	79	15
SHOP EQUIPMENT	Poor			Springs (Chassis).....	35	79	54
Battery Charging Equipment.....	5	44	142	Valves.....	114	91	20
Car Lifts.....	2	15	159	Water Pump Parts.....	118	91	19
Car Washers.....	2	12	156	Engine Bearings.....	150	64	12
Compressors.....	13	50	127		1962	1777	641
Drills (Electric).....	40	89	73				
Electric Testing Equipment.....	7	39	130				
Jacks (Garage).....	21	98	88				
Lubricating Equipment.....	9	52	127				
Paint Spray Equipment.....	18	59	115				
Tire Service Equipment.....	14	49	103				
Tool Kits and Sets.....	39	65	73				
Valve Refacers.....	16	52	107				
Wheel Aligners.....	16	47	121				
Wheel Balancers.....	13	52	118				
Frame Straighteners.....	3	25	132				
Headlight Testers.....	3	23	140				
Welding Equipment.....	45	73	72				
	266	844	1983		629	981	241

MOST ACTIVE LINES

Positions of Leaders	April 1942	April 1941	May 1941	Positions of Leaders	April 1942	April 1941	May 1941
Fan Belts.....	1	6	7	Valves.....	11
Gaskets.....	2	4	3	Ball & Roller Bearings.....	12	10	11
Engine Bearings.....	3	5	4	Other Ignition Parts.....	13	13	12
Mufflers.....	4	1	1	Pins.....	14	18	
Rings.....	5	3	2	Ignition Wire & Cables.....	15	15	14
Spark Plugs.....	6	2	5	Pistons.....	16
Brake Lining.....	7	8	10	Lamps.....	17	14	15
Oil Filters.....	8	7	6	Fuses.....	18
Clutch Plates & Parts	9	9	9	Coils.....	19	20	17
Water Pump Parts.....	10	..	13	Cable (Battery).....	20	17	16

HOW ITEMS ARE RATED

"Most Active Lines" are chosen on the basis of the highest number of jobber reports indicating "Good" for the items selected among the twenty most active lines. "Activity" as used here has no bearing on volume, so the lists should not be interpreted as meaning the lines on which jobbers are enjoying the greatest volume. Most active lines are those which the greatest number of reporting wholesalers indicate are selling "considerably above normal" in their particular markets.

HOW TO READ THIS CHART

Information from which this chart is compiled is obtained monthly from a selected list of 500 wholesalers. Figures show the number of wholesalers reporting. Normal is taken as average sales for this month during the past few years.

Good—Sales considerably above normal.

Fair—Sales slightly above or below normal.

Poor—Sales noticeably below normal.

FASTER TRANSMISSION WORK

Pop O'Neill, though a fictional veteran in the repair game, is one man who can keep up with the times, even on such a detail as driving the bearing off a transmission mainshaft.



When the kid he's teaching to be a real mechanic tries to do the job by main strength, Pop shows him how such methods go contrary to the present need to conserve anything that has any further use, especially automobile parts. It's an article all servicemen with beginners in their shops will want to show the new men.

10 WAYS TO GET BRAKE WORK

Changes are many and important in the service picture, but brake business, if anything, has benefited under wartime conditions. Tire-conscious customers are taking no chances on wearing out tires with bad brakes, and shops that were prepared for the business are getting it. Martin's Brake Service was such a shop. This article explains its 10 simple rules for building brake volume.

SERVICE KEEPS DEALERS GOING

The surprising results of a survey made recently to see exactly how the cessation of new-car production has affected car dealers. To the question, "How's business?" 20 per cent replied, "Good," and more than half reported, "Fair." Credit for the unexpected picture is given by most of the dealers to greater emphasis upon service.

WHEEL ALINING AS A TIRE SAVER

This article raises a new and highly important question. Are owners who are entitled to obtain new and re-capped tires to be permitted to put them on cars on which the front



wheels are out of line, and thus waste more valuable rubber? The article suggests that rationing boards would be wise to see that wheels are properly aligned and balanced before certificates are issued for new or re-capped tires.



Why your Red Cross urgently needs

FIFTY MILLION DOLLARS, NOW

How the fund is allocated . . .

What it does in service

Every dollar that you give now to your Red Cross marches into the thick of things where humanitarian help is needed most—up to the fronts and battle stations where the fighting is heaviest. Into the Red Cross hospitals and First Aid units where prompt medical attention and supplies may save innumerable lives. And throughout our broad land to train and equip volunteers to meet any emergency that may strike.

How the \$50,000,000

War Fund is Used

SERVICE TO THE ARMED FORCES • • • • • • • \$25,000,000

Provides for the care, welfare and morale of the Army and Navy, including services to men in hospitals and during convalescence. • Provides an important link between the service men and their families; keeps the families from breaking up, supplies food, shelter, medicine, and even jobs where necessary. • Provides essential medical and other supplies outside of standard Government equipment. • Operates Red Cross headquarters at camps and naval stations. • Enrolls blood donors and medical technologists for Army and Navy needs. • Provides millions of surgical dressings, sweaters, socks, etc., through volunteer workers.

DISASTER AND CIVILIAN EMERGENCY RELIEF • • • \$10,000,000

Supplies emergency needs for food, clothing, shelter and medical attention for disaster victims. • Assists stricken families in repair of homes and other adjustments; provides minimum reserves of essential relief supplies to prevent unnecessary delays.

CIVILIAN DEFENSE SERVICES • • • • • • • \$ 5,000,000

Trains volunteers for home nursing and nurses' aides. • Trains nurses, men and women, for active duty with the Army and Navy. • Trains volunteers in First Aid and accident prevention. • Trains volunteers for work in Motor Corps, Canteen and Production. • Instructs men, women and children in preparedness against explosive and incendiary bombs. • Organizes for evacuation of children and their families from stricken areas. • Assists Red Cross Chapters in establishing effective coordination of emergency relief with local and State defense authorities.

SERVICE AND ASSISTANCE THROUGH CHAPTERS • \$ 4,000,000

Gives assistance and service to the 3,740 Red Cross Chapters with their 6,131 Branches responsible for local Red Cross activities, particularly welfare work among the service men and their families.

OTHER ACTIVITIES AND CONTINGENCIES • • • • \$ 6,000,000

Provides for unforeseen expansions in program and for new activities made necessary by unexpected developments.

TOTAL • • • • • • • • • • • • • • • • • \$50,000,000

THE AMERICAN RED CROSS \$50,000,000 WAR FUND

Note to Red Cross Canvassers: Use this material to better inform contributors how their donations are being expended.

Awarded Navy Cross

Ensign D. Arnold Singleton, U. S. N. R., formerly assistant manager of Edgewater terminal, Valvoline Oil Co., was decorated the other day along with two petty officers from his command with the Navy Cross. The citation said

in part "Distinguished service in line of his profession . . . displayed extraordinary courage and disregard of personal danger, during the attack on the fleet at Pearl Harbor by Japanese forces on Dec. 7, 1941."

Ensign Singleton is the son of Vice-President M. R. Singleton of Valvoline Oil Co., who has been lent to the United States for service for the duration as Salvage Director for the Petroleum Industry, Bureau of Conservation, War Production Board, Washington, D. C.

Utility Panel

With the destiny of America's war-time highway transportation resting squarely in the hands of automotive servicemen, the Electric Auto-Lite Co. is utilizing every source at its command to assist the men who "Keep 'em Rolling." Just started under the theme, "Auto-Lite Means Auto Life," is a heavy advertising program designed to promote service. Continuing to function in ever-increasing importance is the Auto-Lite educational program. Auto-Lite qualified service men are giving freely of their time, effort and knowledge in the production of service articles for trade magazines. And new ideas and innovations are constantly being developed to assist the trade.

As an example a general utility panel has been assembled at the Auto-Lite Service School. It is not a commercial product and is designed for checking and setting voltage regulators, opening and closing of circuit breakers, horn relays, transmission control relays, transmission over-drive solenoids and testing voltmeter and ammeter against a standard meter.

Send a penny postcard or write to the Parts & Service Division of The Electric Auto-Lite Co., Toledo, Ohio, for a drawing of the utility panel. There is no charge.

Opens New Ad Office

Borg-Warner Corp. has established a new advertising department at the corporation offices, 310 South Michigan Avenue, Chicago, Ill.

New offices will be located in Chicago on the 17th floor of the 310 S. Michigan Building, Room 1738. Members of the department are Johnson S. Davis and G. A. Shallberg, Jr.



Ensign Singleton

ON THE JOB!

WE ARE proud to announce
that we are meeting to the
fullest extent the demands made
on us for essential war materials.

While serving Uncle Sam we
are also satisfying all reasonable
demands made on us by our cus-
tomers and friends, permissible
under Government regulations.

Brake Parts
Brake Fluid
Brake Tools

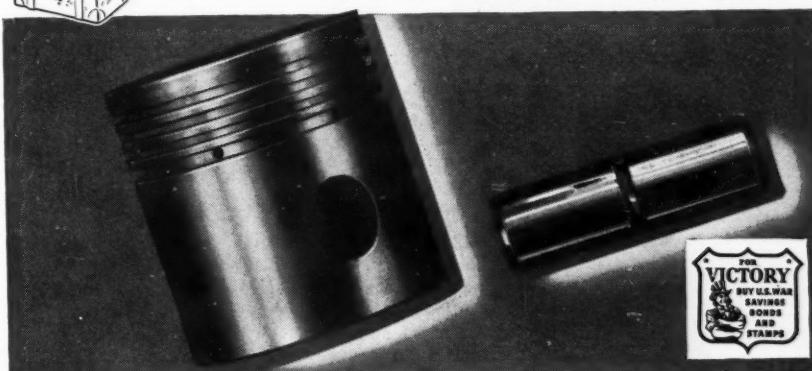
by



EIS MANUFACTURING CO., INC., MIDDLETOWN, CONN.



"TOP GRAIN" MEANS FINEST QUALITY IN LEATHER . . .



"TOLEDO" Means Finest Quality in
Precision Motor and Chassis Parts!

ENDORSED BY AMERICA'S
"MEN WHO KNOW MOTORS"!

Toledo Valves, Pistons, Engine Bearings, Cylinder Sleeves. The 100% Complete Motor, Water Pump, and Chassis Parts Line.

Toledo FIRST-LINE Pistons and chrome-plated Piston Pins are but two of the quality items in the complete Toledo line. America's "Men Who Know Motors" have endorsed this line by buying more Toledo products year after year. Make sure your parts are as good as your workmanship. Say "Toledo" in '42!

TOLEDO



THE TOLEDO STEEL PRODUCTS COMPANY • TOLEDO, OHIO, U. S. A.

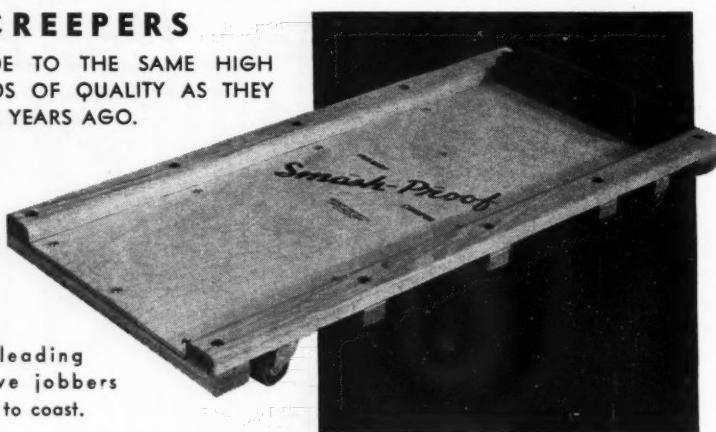
Warehouses: Atlanta • Boston • Chicago • Cincinnati • Cleveland • Dallas • Denver • Detroit • Indianapolis
Jacksonville • Kansas City • Memphis • Minneapolis • New York • Oklahoma City • Omaha • Philadelphia
Pittsburgh • Richmond • St. Louis • Wichita • Los Angeles • San Francisco • Portland • Seattle

Smash-Proof

CREEPERS

ARE MADE TO THE SAME HIGH STANDARDS OF QUALITY AS THEY WERE TEN YEARS AGO.

Sold by leading automotive jobbers from coast to coast.



**HULBERT CREEPER COMPANY
ASHTABULA, OHIO**

LEONARD ^{PATENTED} **air cooled** **SPARK PLUGS**

OLD IN PRINCIPLE
The only spark plug that's air-cooled! Constructed on the principle of the spoon in the glass—the spoon carries off the heat from boiling water, preventing the glass from cracking.

NEW IN SPARK PLUGS
LEONARD'S exclusive ventilated hollow-center electrode, with heat carry-off wire dissipates the tremendous heat generated in today's high speed, high-compression motors, preventing insulator breakage and materially increasing the life of the plug.

Leonard High Compression Spark Plugs give your customers easier starting—faster pickup—and longer life at top performance. Install a set in your own car and see what a difference they make.

Send us your jobber's name if he can't supply you.

Leonard flat-edged electrodes with spark gap control hold gap setting longer, preventing power loss.

The Most Complete Line of Passenger Car and Heavy Duty Spark Plugs.

LEONARD SPARK PLUG CO., INC., NEWARK, N. J.

Since 1897

UNITED STATES ELECTRICAL TOOLS

have never swerved from their original standards of **QUALITY AND SERVICE**.

**THE UNITED STATES
ELECTRICAL TOOL CO.
CINCINNATI, OHIO**

HERE'S A HORSE OF A DIFFERENT COLOR

Thermoid
Thermoidized
PRE-STRETCHED
FAN BELTS

STOP TROUBLE BEFORE IT STARTS

Tribute to Process

Tribute to the profit-producing ability of the Koetherizing process of restoring piston skirts to their original condition is contained in the publicity given the shop of the K & S System, Oakland, Cal., in the current issue of *Piston Rings*, house organ of the American Hammered Piston Ring Division of the Koppers Co.

The article shows a picture of the new home of J. E. (Jess) Sawyer, operator of the K & S System. "This," says the caption, "is the house that Jess built." And then immediately below is a view of the K & S shop. The rest of the modern version of the old nursery rhyme serves as a caption: "This the shop that operates the Koetherizer that brought in the business that made the profit that paid for the house that Jess built."

William Fleming, Jr.

William Fleming, Jr., president of The Shaler Co. and its affiliated companies, died April 28 after a heart attack.

Fleming was born in Forfark, Scotland, in 1880. He established residence at Crafton, Pa., as a young man.

From 1900 to 1920 he was associated with the Pennsylvania Railroad as secretary to the executive vice-president. Severing his connection with the railroad in 1920, he became an executive of the Interstate Pipe Co. of Pittsburgh, and in 1926 moved to Milwaukee where he acquired an interest in The Shaler Co., acting as secretary of that company until he was elected president in 1936.

Engine Rebuilders

Will Meet June 22-24

The Automotive Engine Rebuilders Association will hold its 20th Annual Convention at Cleveland, Ohio, June 22-24.

Bob Patterson, executive vice-president, and Tom Duggan, of the Cleveland Committee, will prepare the program which will include all of the modern aspects of the parts and rebuilding business related to the war effort. Leaders in the industry will be scheduled on the program to contribute the latest and most vital information affecting the industry.

Expands Cleaning Service

To better serve the users of all kinds of cleaning equipment and materials, the Detroit Rex Products Co., Detroit, Mich., is increasing its service engineering force by adding over 30 per cent to the number of its field personnel.

This new free service includes consultation on all types of cleaning operations and methods, and the training of new operators of cleaning equipment in its correct operation and maintenance.



Takes
Only
15
Minutes

Quickest
Way
TO INSTALL
AUTO GLASS!

U. S.
Pat. No.
1986694

In setting auto glass with Everseal Channel Stripping, the broken glass can be removed and the new glass installed in 15 minutes or less—and it is not even necessary to remove the metal frame from the car.

Make up for shortage in man-power by adopting this speedier method. Send a postcard for a free sample and see how much quicker Everseal does the job.

EVERSEAL PRODUCTS CO.
3820 Hazelwood, Detroit, Mich.



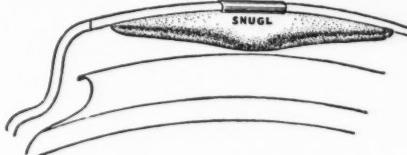
★ SLASH Tune-Up COSTS with NIEHOFF • COILOMETER

MODEL T-18
and Step up Sales of Coils, Cables and Points

Handle more jobs better, faster and easier with this NIEHOFF Precision Instrument. Tests coils on and off the car. Detects faulty insulation—shorted turns—pre-heats coils and shows output on large easy-to-read dial. Also indicates current at spark plugs and detects loss in cap, rotor and high tension wires. Operates from any 6 volt battery. Tests 12 volt coils off car. See your jobber or write for details.

C. E. NIEHOFF & CO. 4925 LAWRENCE AVE.
CHICAGO, ILL.
BRANCH: 1342 S. Flower St., Los Angeles, Cal.

Snugl
Fade-Away
Balance
Weights



ARE MORE NECESSARY THAN EVER BEFORE

Car care and tire protection for victory are making your customers more conscious of wheel balancing as a necessary service.

You'll find it profitable to offer this service with SNUGL Fade-Away BALANCE WEIGHTS—the weights that have a Self-Locking Dove Tail Clip with a Bull Dog Grip.

Easy to sell; easier to install. Write today for complete information.

MID-WESTERN AUTO PARTS, Manufacturers
824 E. Elm Street Kokomo, Indiana
Western Distributor: Kenneth V. Mills, 910 W. Pico Blvd., Los Angeles, Cal.



RBC ROLLER BEARINGS

Keep 'em Flying towards
Victory ROLLER BEARING COMPANY of AMERICA
26 Whitehead Road TRENTON, N. J.

SHORT CUTS to SAVINGS through OAKITE cleaning

FOR EXAMPLE:

get more cleaning for less money

Servicing and repairing trucks, buses and passenger motor vehicles will continue to be big business for a long time. When doing this work, save and conserve by using that many-purpose material

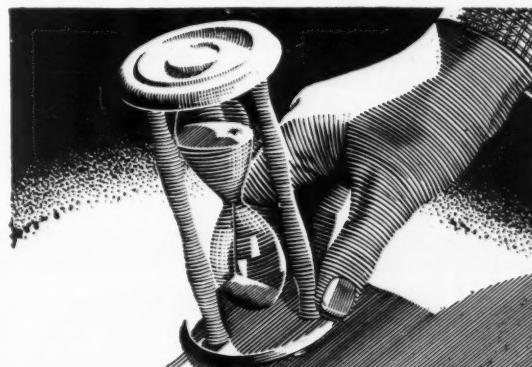
OAKITE PENETRANT

for cleaning floors, chassis of trucks and cars, cleaning cooling systems and a lot of other jobs. Oakite Penetrant is economical, safe, easy to use. Gives you more cleaning for less money.

A FREE 36-page manual contains many helpful tips on a wide range of repair and overhaul work. A post-card request brings your copy by return mail.

OAKITE PRODUCTS, INC., 24C Thames St., New York
Representatives in All Principal Cities of the United States and Canada

OAKITE **CLEANING**
MATERIALS...METHODS...SERVICE FOR EVERY CLEANING REQUIREMENT



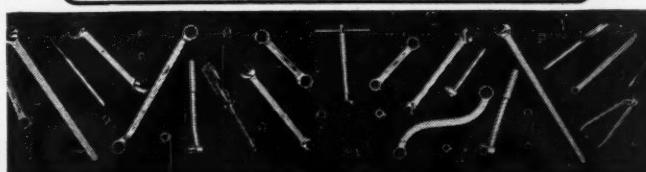
Time

determines the worth of all things. Time has determined the intrinsic value of Duro Tools. Their years of uninterrupted service—their precision performance of specific operations—have proven the importance of their quality.

DURO METAL PRODUCTS COMPANY
Dept. MA-3 — 2649 N. Kildare Ave.
CHICAGO, ILLINOIS

DURO

MANUFACTURERS OF OVER 500,000,000 TOOLS



FOR THE OIL GASOLINE & WATER CONNECTIONS

VELLUMOID

VELLUMOID VELLUMOID

VELLUMOID GASKETS

Protect Quality Repair Work with VELLUMOID Gaskets. They make tight connections which prolong the life of the cars you service.

Sold through Jobbers. The Vellumoid Co., Worcester, Mass.



(Airplane Photo Courtesy U. S. Army Air Corps)

**GUNK New Army Lustreless Paint
... To Clean and Preserve 100%
Camouflage ... No Shine**

GUNK
is a safe cleaner
for aluminum.



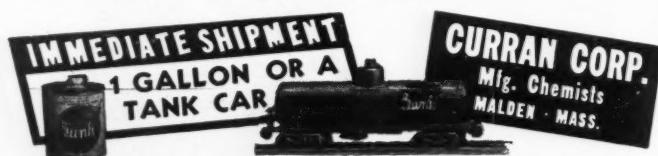
CLEANS ENGINES (AUTO OR AIRPLANE) FASTER THAN STEAM CLEANING . . . TAKE ADVANTAGE OF A WARM ENGINE

U. S. WAR TANKS

For better thermal efficiency, cooling and inspection, GUNK emulsifies all traces of oil sludge and abrasive dirt from oil coolers, cylinder barrels and mechanisms.

RIFLED BORES

GUNK makes modern Cleaner-Preservative for rifled bores and cannon. Special formula on "official" request.



**DISPLAY
THIS
SIGN**

and cash in on
Wagner program

Ask your Jobber or write us for details



AUTOMOTIVE PARTS DIVISION H42-3A
Wagner Electric Corporation
6400 Plymouth Avenue, St. Louis, Mo., U. S. A.

We're making only war materials now—to hasten the day when we may serve you again with...

ARVIN

HOT WATER

Car Heaters

NOBLITT-SPARKS INDUSTRIES, INC.
Columbus, Indiana

PLOMB QUALITY TOOLS HELP BUILD FOR VICTORY



★ Planes that fly with the speed of a bullet—trucks, tanks and ships that can take the punishment of sustained top speed under the toughest conditions—guns that fire hard, fast, straight and true—these are some of the implements of modern warfare.

★ They must be produced with utmost speed—and nearly all such production begins with hand tools.

★ Throughout every phase of war production PLOMB tools are in tremendous demand—because of PLOMB'S famous quality that helps make swift, safe, sure production possible. Of the 1200 kinds in the complete PLOMB line, nearly every one is being used—in quantity! The quality that has made them outstanding in ordinary use is even more important in meeting today's urgent demands of the nation.—Plumb Tool Company, Los Angeles, California.

▽ PLOMB ▽
Streamlined Tools

MOTOR AGE

— is a publication keyed directly to the needs of the maintenance field. Built on the requirements of the serviceman. Edited by Bill Toboldt. Read it every month.

A Chilton Publication

**CHESTNUT AND 56TH STS.
PHILADELPHIA, PA.**

PAR

AIR COMPRESSORS

(Write for Catalog "A")

LYNCH MANUFACTURING CORPORATION
Defiance, Ohio, U. S. A.
(Formerly Modern Equipment Corporation)

BLUE CROWN

SPARK PLUGS



FINNED SHELL SAVES GAS

Ask your Jobber
MOTOR MASTER PRODUCTS CORP.
1000 Waukegan Ave., Chicago, U.S.A.

Export Distribution
Borg-Warner International Corp., Chicago

Make Big Profits on Small Investment in SHURHIT IGNITION PARTS



Ask your Shurhit jobber or write us for details on General Ignition Assortments of fast-moving parts . . . Contact Points . . . Condensers . . . Rotors . . . Caps . . . Colls . . . Switches, etc.

SHURHIT PRODUCTS, INC.
Waukegan, Ill.

BALDOR

ELECTRICAL SPECIALISTS FOR 22 YEARS

Manufacturers of
Electric Motors
Electric Motor Grinders
Battery Chargers
Fast Battery Chargers
Battery Testers

Write for Bulletins

BALDOR ELECTRIC COMPANY
4375 Duncan Ave. ST. LOUIS, MO.

Ramco Introduces Re-Powering Program

A new program to enable automotive maintenance shops, car dealers and service stations to coordinate their services more effectively with the war effort is announced by the Ramsey Accessories Mfg. Corp., St. Louis, Mo.

This program, to be known as the Ramsey Re-Powering Program, has three main objectives: Effectively to aid automotive maintenance shops in helping passenger and commercial-car owners cut down the extravagant waste of gas and oil; to furnish these shops with new, improved methods of locating and correcting the chief causes of motor failures—carburetion, ignition and compression; and to provide car dealers and service stations with a constructive, essential service that will enable them to stay in business during the war period.

Shops qualifying to use the Re-Powering Plan will be supplied with a large, colorful and dramatic wall background for departmentalizing the work. A portable, educational test bench is included, on top of which is a large tester. On top of the bench, to be opened up in front of the car owner is a 12 x 18 in. educational book on the pages of which is given a complete inside-of-the-engine story with full colorful illustrations. The mechanic first makes a test before the eyes of the car or truck owner to prove whether or not there is the need for work. Then the vehicle owner may easily and quickly get the picture of the very thing that the mechanic is talking about.

In addition, other types of test equipment are illustrated and suggestions for their use are explained.

V. S. (Vic) Baylis

V. S. (Vic) Baylis, service engineer for the Federal-Mogul Corp., died last month in San Francisco, Cal., after suffering a heart attack.

Baylis, after closing out his jobbing business at Grand Rapids, Mich., joined the Douglas-Dahlin Co., and when that company was taken over by Federal-Mogul he went with the latter. Since 1925, he had handled various territories, and for a number of years had been service engineer, in which capacity he had traveled the country, giving service talks before service groups and aiding in straightening out service problems.

Quiet!

Furthering the campaign aimed at thoughtless repetition of rumors, Walker Manufacturing Co., Racine, Wis., has distributed a poster reading, "Quiet is requested for those who have Big Ears," and showing caricatures of Hitler, Hirohito and Mussolini. Copies of this poster are available at a cost of five cents each.

ONLY

SURE

WAY

*to seal a tire
valve is with
an air-tight cap*



**After pressure testing
always 'recap' the tire valve
and save rubber**

GUARANTEED AIR-TIGHT UP TO 250 POUNDS PRESSURE

A. SCHRADER'S SON, BROOKLYN, N. Y.
Division of Scovill Manufacturing Company, Inc.

LION
is still able to deliver the GOODS!

Now, in these stirring times, it is paying you DIVIDENDS for Lining Up With LION.

We are still supplying our old customers the bulk of their requirements!

Dependable Quality
Replacement Parts For FORD CHEVROLET PLYMOUTH

LION AUTO PARTS & MFG. CO., INC.
1920 S. Michigan Ave., 2214-20 Main St., 1239 Osborne St., CHICAGO DALLAS MONTREAL



Keep Tires from Going Floozy!

Wheel Balancing with L & H Weights reduces tire wear 20% to 25%. Call this to the attention of your customers. It means many extra service jobs.

HARLEY C. LONEY CO.
16893 Wyoming
Detroit, Mich.

FREE SAMPLE

For running-in new and rebuilt engines, use auxiliary lubricants containing—

dag
REG. U. S. PAT. OFF.
COLLOIDAL GRAPHITE

Acheson Colloids Corporation
PORT HURON • MICHIGAN

HOW IT STARTED

(Continued from Page 36)

porary female secretary, whose name it now appears is Mrs. Lioy May Shock and not just Lioy May as given in the original articles. They toured 19,000 miles through all 48 States, called on 347 of the country's 85,000 automobile repair shops, and reported, in the article signed by Riis, that 63 per cent of the shops lied, cheated, and overcharged.

All the skulduggery, the magazine article charged, concerned a "simple" defect. Patric bought a second-hand Lincoln Zephyr coupe, had it thoroughly overhauled, and installed many new parts. Then he and Mrs. Shock went traveling. Before reaching a repair shop, Patric would get out and detach the wire from the coil for one bank of cylinders. The original wire had a ring terminal and Patric, fearing mechanics would suspect jobbery if the nut were entirely removed from the post, had substituted a U-shaped terminal. Then Miss May, or Mrs. Shock, would drive the limping car into the shop and pretend not to know what was wrong with it.

In a reply to the article at the time, Julian Chase, directing editor of MOTOR AGE, wrote: "The male investigator and his female secretary had a trick which they played. They baited a trap in which to catch their prey. They made a dishonest approach in their search for the honest serviceman. Or were they, in reality, assiduously seeking out the few dishonest ones to prove a previously made assumption?"

The present volume offers some background on the world-shaking experiment to show how scrupulously the Reader's Digest investigators sought to avoid deception. For one thing, their first attempt showed that servicemen didn't deceive easily. This is surprising in itself, as the original article did not explain that the Zephyr was used only after the first car had failed dismally to hoodwink repairmen.

It was on Dec. 27, 1940, that Patric first fared forth, driving a 1939 Buick sedan. He was, he wrote to Riis, trying to find the right "test." After driving from New York City to Bridgeport and Stamford, Conn., and thence to Newark, N. J., he confessed to Riis on Jan. 2: "I'm beginning to think that either all garages are 100 per cent honest and these things people say about them are wrong or due merely to carelessness and inefficiency; or else we've an entirely wrong technique."

One shop told him the front wheels were out of line. Doubting Patric had the wheels checked at three more shops and, lo and behold, the wheels actually were out of line.

(Continued on Page 93)

TIME PAYMENTS FOR

CAR REPAIRS

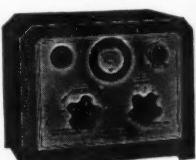
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HOW IT STARTED

(Continued from Page 92)

He got as far as Philadelphia by Jan. 6 and an idea was born. He remembered that he had once got a car started by replacing the high-tension spark-coil wire. This was the idea that was finally used to tempt mechanics on the cross-country jaunt. The only trouble was, pulling the wire on most cars would kill the engine. It was not until Jan. 16 that Patric found the solution. He discovered that the Zephyr had two coils and that pulling one wire did no more than rob the car of half its power.

As he explains in one of his letters to Riis, Patric had no idea whatever of deceiving anyone. In fact, he selected the particular trick he did because the disconnected wire would "stick out like a bandage on a chorine's knee."

After getting the second-hand Zephyr overhauled to his satisfaction, Patric looked around for a secretary. It must be a woman. "I'm sure," he wrote Riis, "you're right in thinking that women get gyped more often than men." Not that he was starting out to get gyped. It was only coincidence that he called the car "Lorelei," after the mythical temptress of the Rhine, although he did explain to Riis that "she'll be a siren to lure the gyps."

It is worth noting, incidentally, that one of Patric's letters contradicts Riis' article. The latter said that Patric was "exceptionally familiar with the mechanism of cars." Patric himself writes in one letter, "If I, who am no mechanic, etc."

The background material lends new interest to the original tracts on truth, light, and little charity, as it offers an interesting sidelight on the mental processes of a crusader. Then there are the appended chapters containing comment by the trade. It must have been a feat to set this down without scorching the pages, but the same genius that enabled the investigators to let themselves be gyped has surmounted the difficulty.

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